IN THE CLAIMS

CLAIM 1 (Previously Presented) A superconducting apparatus comprising a composition having a transition temperature greater than or equal to 26°K, the composition including a rare earth or rare earth-like element, a transition metal element capable of exhibiting multivalent states and oxygen, including at least one phase that exhibits superconductivity at temperature greater than or equal to 26°K, a means for maintaining said composition at said temperature to exhibit said superconductivity and means for passing an electrical superconducting current through said composition while exhibiting said superconductivity.

CLAIM 2 (Previously Presented) The superconducting apparatus of claim 1, further including an alkaline earth element substituted for at least one atom of said rare earth or rare earth-like element in said composition.

CLAIM 3 (Previously Presented) The superconducting apparatus of claim 2, where said transition metal is Cu.

CLAIM 4 (Previously Presented) The superconducting apparatus of claim 3, where said alkaline earth element is selected from the group consisting of B, Ca, Ba, and Sr.

CLAIM 5 (Previously Presented) The superconducting apparatus of claim 1, where said transition metal element is selected from the group consisting of Cu, Ni, and Cr.

CLAIM 6 (Previously Presented) The superconducting apparatus of claim 2, where said rare earth or rare earth-like element is selected from the group consisting of La, Nd, and Ce.

CLAIM 7 (Previously Presented) The superconducting apparatus of claim 1, where said phase is crystalline with a perovskite-like structure.

CLAIM 8 (Previously Presented) The superconducting apparatus of claim 2, where said phase is crystalline with a perovskite-like structure.

CLAIM 9 (Previously Presented) The superconducting apparatus of claim 1, where said phase exhibits a layer-like crystalline structure.

CLAIM 10 (Previously Presented) The superconducting apparatus of claim 1, where said phase is a mixed copper oxide phase.

CLAIM 11 (Previously Presented) The superconducting apparatus of claim 1, where said composition is comprised of mixed oxides with alkaline earth doping.

CLAIM 12 (Previously Presented) A superconducting combination, comprising a superconductive oxide having a transition temperature greater than or equal to 26°K,

means for passing a superconducting electrical current through said composition while said composition is at a temperature greater than or equal to 26°K and less than said transition temperature, and

cooling means for cooling said composition to a superconducting state at a temperature greater than or equal to 26°K.

CLAIM 13 (Original) The combination of claim 12, where said superconductive composition includes a transition metal oxide.

CLAIM 14 (Original) The combination of claim 12, where said superconductive composition includes Cu-oxide.

CLAIM 15 (Original) The combination of claim 12, where said superconductive composition includes a multivalent transition metal, oxygen, and at least one additional element.

CLAIM 16 (Original) The combination of claim 15, where said transition metal is Cu.

CLAIM 17 (Original) The combination of claim 15, where said additional element is a rare earth or rare earth-like element.

CLAIM 18 (Original) The combination of claim 15, where said additional element is an alkaline earth element.

CLAIM 19 (Original) The combination of claim 12, where said composition includes a perovskite-like superconducting phase.

CLAIM 20 (Original) The combination of claim 12, where said composition includes a substituted transition metal oxide.

CLAIM 21 (Original) The combination of claim 20, where said substituted transition metal oxide includes a multivalent transition metal element.

CLAIM 22 (Original) The combination of claim 20, where said substituted transition metal oxide is an oxide of copper.

CLAIM 23 (Original) The combination of claim 20, where said substituted transition metal oxide has a layer-like structure.

CLAIM 24 (Previously Presented) An apparatus comprising:

a transition metal oxide having a phase therein which exhibits a superconducting state at a critical temperature greater than or equal to of 26°K,

means for lowering the temperature of said material at least to said critical temperature to produce said superconducting state in said phase, and

means for passing an electrical superconducting current through said transition metal oxide while it is in said superconducting state.

CLAIM 25 (Previously Presented) The apparatus of claim 24, where said transition metal oxide is comprised of a transition metal capable of exhibiting multivalent states.

CLAIM 26 (Previously Presented) The apparatus of claim 24, where said transition metal oxide is comprised of a Cu oxide.

CLAIM 27 (Previously Presented) A superconducting apparatus comprising a composition having a transition temperature greater than or equal to 26°K, said composition being a substituted Cu-oxide including a superconducting phase having a structure which is structurally substantially similar to the orthorhombic-tetragonal phase of said composition, means for maintaining said composition at a temperature greater than or equal to said transition temperature to put said composition in a superconducting state; and means for passing current through said composition while in said superconducting state.

CLAIM 28 (Previously Presented) The superconducting apparatus of claim 27, where said substituted Cu-oxide includes a rare earth or rare earth-like element.

CLAIM 29 (Previously Presented) The superconducting apparatus of claim 27, where said substituted Cu-oxide includes an alkaline earth element.

CLAIM 30 (Previously Presented) The superconducting apparatus of claim 29, where said alkaline earth element is atomically large with respect to Cu.

CLAIM 31 (Previously Presented) The superconducting apparatus of claim 27, where said composition has a crystalline structure which enhances electron-phonon

interactions to produce superconductivity at a temperature greater than or equal to 26°K.

CLAIM 32 (Previously Presented) The superconducting apparatus of claim 31, where said crystalline structure is layer-like, enhancing the number of Jahn-Teller polarons in said composition.

CLAIM 33 (Previously Presented) A superconducting apparatus comprising a composition having a superconducting onset temperature greater than or equal to 26°K, the composition being comprised of a copper oxide doped with an alkaline earth element where the concentration of said alkaline earth element is near to the concentration of said alkaline earth element where the superconducting copper oxide phase in said composition undergoes an orthorhombic to tetragonal structural phase transition.

CLAIM 34 (Previously Presented) A superconducting apparatus having a superconducting onset temperature greater than or equal to 26°K, the composition being comprised of a mixed copper oxide doped with an element chosen to result in Cu^{3+} ions in said composition and a means for passing a superconducting current through said superconducting composition.

CLAIM 35 (Previously Presented) The superconducting apparatus of claim 34, where said doping element includes an alkaline earth element.

CLAIM 36 (Previously Presented) A combination comprising:

a composition having a superconducting onset temperature greater than or equal to 26°K, said composition being comprised of a substituted copper oxide exhibiting mixed valence states and at least one other element in its crystalline structure,

means for passing a superconducting electrical current through said composition while said composition is at a temperature greater than or equal to 26°K and less than said superconducting onset temperature, and

cooling means for cooling said composition to a superconducting state at a temperature greater than or equal to 26°K.

CLAIM 37 (Original) The combination of claim 36, where said at least one other element is an alkaline earth element.

CLAIM 38 (Previously Presented) The combination of claim 36, where said at least one other element is an element which results in Cu^{3+} ions in said composition.

CLAIM 39 (Previously Presented) The combination of claim 36, where said at least one other element is an element chosen to result in the presence of both Cu^{2+} and Cu^{3+} ions in said composition.

CLAIM 40 (Previously Presented) An apparatus comprising a superconductor exhibiting a superconducting onset at an onset temperature greater than or equal to 26°K, said superconductor being comprised of at least four elements, none of which is itself superconducting at a temperature greater than or equal to 26°K, means for maintaining said superconductor at an operating temperature in excess of said onset temperature to maintain said superconductor in a superconducting state and means for passing current through said superconductor while in said superconducting state.

CLAIM 41 (Previously Presented) The apparatus of claim 40, where said elements include a transition metal and oxygen.

CLAIM 42 (Previously Presented) A apparatus having a superconducting onset temperature greater than or equal to 26°K, said superconductor being a doped

transition metal oxide, where said transition metal is itself non-superconducting and means for passing a superconducting electric current through said composition.

CLAIM 43 (Previously Presented) The apparatus of claim 42, where said doped transition metal oxide is multivalent in said superconductor.

CLAIM 44 (Previously Presented) The apparatus of claim 42, further including an element which creates a mixed valent state of said transition metal.

CLAIM 45 (Previously Presented) The apparatus of claim 43, where said transition metal is Cu.

CLAIM 46 (Previously Presented) An apparatus having a superconductor having a superconducting onset temperature greater than or equal to 26°K, said superconductor being an oxide having multivalent oxidation states and including a metal, said oxide having a crystalline structure which is oxygen deficient and a means for passing a superconducting electric current through said superconductor.

CLAIM 47 (Previously Presented) The apparatus of claim 46, where said transition metal is Cu.

CLAIM 48 (Previously Presented) A superconductive apparatus comprising a superconductive composition comprised of a transition metal oxide having substitutions therein, the amount of said substitutions being sufficient to produce sufficient electron-phonon interactions in said composition that said composition exhibits a superconducting onset at temperatures greater than or equal to 26°K, and a source of current for passing a superconducting electric current through said superconductor.

CLAIM 49 (Previously Presented) The superconductive apparatus of claim 48, where said transition metal oxide is multivalent in said composition.

CLAIM 50 (Previously Presented) The superconductive apparatus of claim 48, where said transition metal is Cu.

CLAIM 51 (Previously Presented) The superconductive apparatus of claim 48, where said substitutions include an alkaline earth element.

CLAIM 52 (Previously Presented) The superconductive apparatus of claim 48, where said substitutions include a rare earth or rare earth-like element.

CLAIM 53 (Previously Presented) A superconductive apparatus comprised of a copper oxide having a layer-like crystalline structure and at least one additional element substituted in said crystalline structure, said structure being oxygen deficient and exhibiting a superconducting onset temperature greater than or equal to 26°K.

CLAIM 54 (Original) The superconductor of claim 53, where said additional element creates a mixed valent state of said copper oxide in said superconductor.

CLAIM 55 (Previously Presented) A combination, comprising:

a transition metal oxide having an superconducting onset temperature greater than about 26°K and having an oxygen deficiency, said transition metal being non-superconducting at said superconducting onset temperature and said oxide having multivalent states,

means for passing an electrical superconducting current through said oxide while said oxide is at a temperature greater than or equal to 26°K, and

cooling means for cooling said oxide in a superconducting state at a temperature greater than or equal to 26°K.

CLAIM 56 (Original) The combination of claim 55, where said transition metal is Cu.

CLAIM 57 (Previously Presented) A combination including;

a superconducting oxide having a superconducting onset temperature greater than or equal to 26°K and containing at least 3 elements which are non-superconducting at said onset temperature,

means for passing a superconducting current through said oxide while said oxide is maintained at a temperature greater than or equal to 26°K, and

means for maintaining said oxide in a superconducting state at a temperature greater than or equal to 26°K and less than said superconductive onset temperature.

CLAIM 58 (Previously Presented) A combination, comprised of:

a copper oxide superconductor having a superconductor onset temperature greater than about 26°K including an element which results in a mixed valent state in said oxide, said oxide being crystalline and having a layer-like structure,

means for passing a superconducting current through said copper oxide while it is maintained at a temperature greater than or equal to 26°K and less than said superconducting onset temperature, and

means for cooling said copper oxide to a superconductive state at a temperature greater than or equal to 26°K and less than said superconducting onset temperature.

CLAIM 59 (Previously Presented) A combination, comprised of:

a ceramic-like material having an onset of superconductivity at an onset temperature greater than or equal to 26°K,

means for passing a superconducting electrical current through said ceramic-like material while said material is maintained at a temperature greater than or equal to 26°K and less than said onset temperature, and

means for cooling said superconducting ceramic-like material to a superconductive state at a temperature greater than or equal to 26°K and less than said onset temperature, said material being superconductive at temperatures below said onset temperature and a ceramic at temperatures above said onset temperature.

CLAIM 60 (Previously Presented) An apparatus comprised of a transition metal oxide, and at least one additional element, said superconductor having a distorted crystalline structure characterized by an oxygen deficiency and exhibiting a superconducting onset temperature greater than or equal to of 26°K, a source of current for passing a superconducting electric current in said transition metal oxide, and a cooling apparatus for maintaining said transition metal oxide below said onset temperature at a temperature greater than or equal to 26°K.

CLAIM 61 (Previously Presented) The apparatus of claim 60, where said transition metal is Cu.

CLAIM 62 (Previously Presented) An apparatus comprised of a transition metal oxide and at least one additional element, said superconductor having a distorted crystalline structure characterized by an oxygen excess and exhibiting a superconducting onset temperature greater than or equal to 26°K, a source of current for passing a superconducting electric current in said transition metal oxide, and a cooling apparatus for maintaining said transition metal oxide below said onset temperature and at a temperature greater than or equal to of 26°K.

CLAIM 63 (Previously Presented) The apparatus of claim 62, where said transition metal is Cu.

CLAIM 64 (Previously Presented) A combination, comprising:

a mixed copper oxide composition having enhanced polaron formation, said composition including an element causing said copper to have a mixed valent state in said composition, said composition further having a distorted octahedral oxygen environment leading to a T_c greater than or equal to 26°K,

means for providing a superconducting current through said composition at temperatures greater than or equal to 26°K and less than said T_c, and

cooling means for cooling said composition to a temperature greater than or equal to 26°K and less than said T_c.

CLAIM 65 (Previously Presented) An apparatus comprising a composition exhibiting superconductivity at temperatures greater than or equal to 26°K, said composition being a ceramic-like material in the RE-AE-TM-O system, where RE is a rare earth or near rare earth element, AE is an alkaline earth element, TM is a multivalent transition metal element having at least two valence states in said composition, and O is oxygen, the ratio of the amounts of said transition metal in said two valence states being determined by the ratio RE : AE, a source of current for passing a superconducting electric current in said transition metal oxide, and a cooling apparatus for maintaining said transition metal oxide below said onset temperature and at a temperature greater than or equal to 26°K.

CLAIM 66 (Previously Presented) An apparatus comprising a superconductive composition having a transition temperature greater than or equal to 26°K, the composition including a multivalent transition metal oxide and at least one additional element, said composition having a distorted orthorhombic crystalline structure, a source of current for passing a superconducting electric current in said transition metal oxide, and a cooling apparatus for maintaining said transition metal oxide below said onset temperature and at a temperature greater than or equal to 26°K.

CLAIM 67 (Previously Presented) The apparatus of claim 66, where said transition metal oxide is a mixed copper oxide.

CLAIM 68 (Previously Presented) The apparatus of claim 67, where said one additional element is an alkaline earth element.

CLAIM 69 (Previously Presented) A superconductive combination, comprising:

a superconducting composition exhibiting a superconducting transition temperature greater than or equal to 26°K, said composition being a transition metal oxide having a distorted orthorhombic crystalline structure, and

means for passing a superconducting electrical current through said composition while said composition is at a temperature greater than or equal to 26°K and less than said superconducting transition temperature.

CLAIM 70 (Original) The combination of claim 69, where said transition metal oxide is a mixed copper oxide.

CLAIM 71 (Original) The combination of claim 70, where said mixed copper oxide includes an alkaline earth element.

CLAIM 72 (Original) The combination of claim 71, where said mixed copper oxide further includes a rare earth or rare earth-like element.

CLAIM 73 (Previously Presented) An apparatus comprising a composition of matter comprising a superconducting onset temperature greater than or equal to 26°K, said composition of matter made by a method comprising the steps of:

preparing powders of oxygen-containing compounds of a rare earth or rare earth-like element, an alkaline earth element, and copper,

mixing said compounds and firing said mixture to create a mixed copper oxide composition including said alkaline earth element and said rare earth or rare earth-like element, and

annealing said mixed copper oxide composition at an elevated temperature less than about 950°C in an atmosphere including oxygen to produce a superconducting composition having a mixed copper oxide phase exhibiting a superconducting onset temperature greater than or equal to 26°K, said superconducting composition having a layer-like crystalline structure after said annealing step.

CLAIM 74 (Original) The method of claim 73, where the amount of oxygen incorporated into said composition is adjusted by said annealing step, the amount of oxygen therein affecting the critical temperature T_c of the superconducting composition.

CLAIM 75 (Previously Presented) An apparatus comprising a composition of matter for carrying a superconductive current comprising a superconducting onset temperature greater than or equal to 26°K, said superconductor being comprised of a rare earth or rare earth-like element (RE), an alkaline earth element (AE), copper (CU), and oxygen (O) and having the general formula RE-AE-CU-O, said composition being made by a method including the steps of combining said rare earth or rare earth-like element, said alkaline earth element and said copper in the presence of oxygen to produce a mixed copper oxide including said rare earth or rare earth-like element and said alkaline earth element therein, and

heating said mixed copper oxide to produce a superconductor having a crystalline layer-like structure and exhibiting a superconducting onset temperature greater than or equal to 26°K the critical transition temperature of said superconductor being dependent on the amount of said alkaline earth element therein.

CLAIM 76 (Previously Presented) The apparatus of claim 75, where said heating step is done in an atmosphere including oxygen.

CLAIM 77 (Previously Presented) A combination, comprising:

a mixed copper oxide composition including an alkaline earth element (AE) and a rare earth or rare earth-like element (RE), said composition having a layer-like crystalline structure and multi-valent oxidation states, said composition exhibiting *a* substantially zero resistance to the flow of electrical current therethrough when cooled to a superconducting state at a temperature greater than or equal to 26°K, said mixed copper oxide having a superconducting onset temperature greater than or equal to 26°K, and

electrical means for passing an electrical superconducting current through said composition when said composition exhibits substantially zero resistance at a temperature greater than or equal to 26°K and less than said onset temperature.

CLAIM 78 (Original) The combination of claim 77, where the ratio (AE,RE) : Cu is substantially 1:1.

CLAIM 79 (Original) The combination of claim 77, where the ratio (AE,RE) : Cu is substantially 1:1.

CLAIM 80 (Original) The combination of claim 77, wherein said crystalline structure is perovskite-like.

CLAIM 81 (Original) The combination of claim 77, where said mixed copper oxide composition has a non-stoichiometric amount of oxygen therein.

CLAIM 82 (Previously Presented) An apparatus comprising a superconductor comprising a superconducting onset temperature greater than or equal to 26°K, said superconductor being comprised of a rare earth or rare earth-like element (RE), an alkaline earth element (AE), a transition metal element (TM), and Oxygen (O) and having the general formula RE-AE-TM-O, said superconductor being made by a method including the steps of combining said rare earth or rare earth-like element, said alkaline earth element and said transition metal element in the presence of oxygen to produce a mixed transition metal oxide including said rare earth or rare earth-like element and said alkaline earth element therein, and

heating said mixed transition metal oxide to produce superconductor having a crystalline layer-like structure and exhibiting a superconducting onset temperature greater than or equal to 26°K, said superconductor having a non-stoichiometric amount of oxygen therein.

CLAIM 83 (Previously Presented) The apparatus of claim 82, where said transition metal is copper.

CLAIM 84 (Previously Presented) A superconducting combination, comprising:

a mixed transition metal oxide composition containing a non-stoichiometric amount of oxygen therein, a transition metal and at least one additional element, said composition having substantially zero resistance to the flow of electricity therethrough when cooled to a superconducting state at a temperature greater than or equal to 26°K, said mixed transition metal oxide has a superconducting onset temperature greater than or equal to 26°K, and

electrical means for passing an electrical superconducting current through said composition when said composition is in said superconducting state at a temperature greater than or equal to 26°K, and less than said superconducting onset temperature.

CLAIM 85 (Original) The combination of claim 84, where said transition metal is copper.

CLAIM 86 (Previously Presented) An apparatus comprising:

a composition including a transition metal, a rare earth or rare earth-like element, an alkaline earth element, and oxygen, where said composition is a mixed transition metal oxide having a non-stoichiometric amount of oxygen therein and exhibiting a superconducting onset temperature greater than or equal to 26°K,

means for maintaining said composition to said superconducting state at a temperature greater than or equal to 26°K and less than said superconducting onset temperature, and

means for passing an electrical current through said composition while said composition is in said superconducting state.

CLAIM 87 (Previously Presented) The apparatus of claim 86, where said transition metal is copper.

CLAIM 88 (Previously Presented) An apparatus comprising:

a composition exhibiting a superconductive state at a temperature greater than or equal to 26°K,

a cooler for cooling said composition to a temperature greater than or equal to 26°K at which temperature said composition exhibits said superconductive state, and

a current source for passing an electrical current through said composition while said composition is in said superconductive state.

CLAIM 89 (Previously Presented) The apparatus of claim 88, where said composition is comprised of a metal oxide.

CLAIM 90 (Previously Presented) The apparatus of claim 88, where said composition is comprised of a transition metal oxide.

CLAIM 91 (Previously Presented) A combination, comprising:

a composition exhibiting the onset of a DC substantially zero resistance state at an onset temperature in excess of 30°K, and

means for passing an electrical current through said composition while it is in said substantially zero resistance state.

CLAIM 92 (Previously Presented) The combination of claim 91, where said composition is a copper oxide.

CLAIM 93 (Previously Presented) An apparatus, comprising:

a mixed copper oxide material exhibiting an onset of superconductivity at an onset temperature greater than or equal to 26°K, and

means for producing an electrical current through said copper oxide material while it is in a superconducting state at a temperature greater than or equal to 26°K.

CLAIM 94 (Previously Presented) The apparatus of claim 93, where said copper oxide material exhibits a layer-like crystalline structure.

CLAIM 95 (Previously Presented) The apparatus of claim 93, where said copper oxide material exhibits a mixed valence state.

CLAIM 96 (Previously Presented) A superconductive apparatus for causing electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition comprising a copper-oxide compound having a layer-type perovskite-like crystal structure, the composition having a superconductor transition temperature T_c of greater than or equal to 26°K;

(b) means for maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and

(c) means for causing an electric current to flow in the superconductor element.

CLAIM 97 (Previously Presented) The superconductive apparatus according to claim 96 in which the copper-oxide compound of the superconductive composition includes at least one rare-earth or rare-earth-like element and at least one alkaline-earth element.

CLAIM 98 (Previously Presented) The superconductive apparatus according to claim 97 in which the rare-earth or rare-earth-like element is lanthanum.

CLAIM 99 (Previously Presented) The superconductive apparatus according to claim 97 in which the alkaline-earth element is barium.

CLAIM 100 (Previously Presented) The superconductive apparatus according to claim 96 in which the copper-oxide compound of the superconductive composition includes mixed valent copper ions.

CLAIM 101 (Previously Presented) The superconductive apparatus according to claim 100 in which the copper-oxide compound includes at least one element in a nonstoichiometric atomic proportion.

CLAIM 102 (Previously Presented) The superconductive apparatus according to claim 101 in which oxygen is present in the copper-oxide compound in a nonstoichiometric atomic proportion.

CLAIM 103 (Previously Presented) A superconductive apparatus for conducting an electric current essentially without resistive losses, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound having a layer-type perovskite-like crystal structure, the copper-oxide compound including at least one rare-earth or rare-earth-like element and at least one alkaline-earth element, the composition having a superconductive/resistive transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_{q=o}$, the transition-onset temperature T_c being greater than or equal to 26°K;

(b) means for maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_{q=o}$ of the superconductive composition; and

(c) means for causing an electric current to flow in the superconductor element.

CLAIM 104 (Previously Presented) The superconductive apparatus according to claim 103 in which the rare-earth or rare-earth-like element is lanthanum.

CLAIM 105 (Previously Presented) The superconductive apparatus according to claim 103 in which the alkaline-earth element is barium.

CLAIM 106 (Previously Presented) The superconductive apparatus according to claim 103 in which the copper-oxide compound of the superconductive composition includes mixed valent copper ions.

CLAIM 107 (Previously Presented) The superconductive apparatus according to claim 106 in which the copper-oxide compound includes at least one element in a nonstoichiometric atomic proportion.

CLAIM 108 (Previously Presented) The superconductive apparatus according to claim 107 in which oxygen is present in the copper-oxide compound in a nonstoichiometric atomic proportion.

CLAIM 109 (Previously Presented) A superconductive apparatus comprising a composition having a transition temperature greater than or equal to 26°K, the composition including a rare earth or alkaline earth element, a transition metal element capable of exhibiting multivalent states and oxygen, including at least one phase that exhibits superconductivity at temperature greater than or equal to 26°K, means for maintaining said composition at said temperature to exhibit said superconductivity and means for passing an electrical superconducting current through said composition while exhibiting said superconductivity.

CLAIM 110 (Previously Presented) The combination of claim 15, where said additional element is rare earth or alkaline earth element.

CLAIM 111 (Previously Presented) A device comprising a superconducting transition metal oxide having a superconductive onset temperature greater than or equal to 26°K, said superconducting transition metal oxide being at a temperature less than said

superconducting onset temperature and having a superconducting current flowing therein.

CLAIM 112 (Previously Presented) A device comprising a superconducting copper oxide having a superconductive onset temperature greater than or equal to 26°K, said superconducting copper oxide being at a temperature less than said superconducting onset temperature and having a superconducting current flowing therein.

CLAIM 113 (Previously Presented) A device comprising a superconducting oxide composition having a superconductive onset temperature greater than or equal to 26°K, said superconducting copper oxide being at a temperature less than said superconducting onset temperature and having a superconducting current flowing therein, said composition comprising at least one each of rare earth, an alkaline earth, and copper.

CLAIM 114 (Previously Presented) A device comprising a superconducting oxide composition having a superconductive onset temperature greater than or equal to 26°K, said superconducting copper oxide being at a temperature less than said superconducting onset temperature and having a superconducting current flowing therein, said composition comprising at least one each of a group IIIB element, an alkaline earth, and copper.

CLAIM 115 (Previously Presented) A device comprising a transition metal oxide having a T_c greater than or equal to 26°K carrying a superconducting current said transition metal oxide is maintained at a temperature less than said T_c.

CLAIM 116 (Previously Presented) An apparatus comprising a transition metal oxide having a T_c greater than or equal to 26°K carrying a superconducting current said transition metal oxide is maintained at a temperature less than said T_c.

CLAIM 117 (Previously Presented) A structure comprising a transition metal oxide having a T_c greater than or equal to 26°K carrying a superconducting current.

CLAIM 118 (Previously Presented) An apparatus comprising a transition metal oxide having a T_c greater than or equal to 26°K carrying a superconducting current.

CLAIM 119 (Previously Presented) A device comprising a copper oxide having a T_c greater than or equal to 26°K carrying a superconducting current said copper oxide is maintained at a temperature less than said T_c.

CLAIM 120 (Previously Presented) An apparatus comprising a copper oxide having a T_c greater than or equal to 26°K carrying a superconducting current said copper oxide is maintained at a temperature less than said T_c.

CLAIM 121 (Previously Presented) A device comprising a copper oxide having a T_c greater than or equal to 26°K carrying a superconducting current.

CLAIM 122 (Previously Presented) An apparatus comprising a copper oxide having a T_c greater than or equal to 26°K carrying a superconducting current.

CLAIM 123 (Previously Presented) A superconductive apparatus comprising:

a composition of the formula $Ba_xLa_{x-5}Cu_5O_Y$ wherein x is from about 0.75 to about 1 and y is the oxygen deficiency resulting from annealing said composition at temperatures from about 540°C to about 950°C and for times of about 15 minutes to about 12 hours, said composition having a metal oxide phase which exhibits a superconducting state at a critical temperature greater than or equal to 26°K;

a means for maintaining the temperature of said composition at a temperature less than said critical temperature to induce said superconducting state in said metal oxide phase; and

a means for passing an electrical current through said composition while said metal oxide phase is in said superconducting state.

CLAIM 124 (Previously Presented) A device comprising a composition of matter having a T_c greater than or equal to 26°K carrying a superconducting current, said composition comprising at least one each of a IIIB element, an alkaline earth, and copper oxide said device is maintained at a temperature less than said T_c.

CLAIM 125 (Previously Presented) An apparatus comprising a composition of matter having a T_c greater than or equal to 26°K carrying a superconducting current, said composition comprising at least one each of a rare earth, an alkaline earth, and copper oxide.

CLAIM 126 (Previously Presented) A device comprising a composition of matter having a T_c greater than or equal to 26°K carrying a superconducting current, said composition comprising at least one each of a rare earth, and copper oxide.

CLAIM 127 (Previously Presented) A device comprising a composition of matter having a T_c greater than or equal to 26°K carrying a superconducting current, said composition comprising at least one each of a IIIB element, and copper oxide.

CLAIM 128 (Previously Presented) A transition metal oxide device comprising a T_c greater than or equal to 26°K and carrying a superconducting current.

CLAIM 129 (Previously Presented) A copper oxide device comprising a T_C greater than or equal to 26°K and carrying a superconducting current.

CLAIM 130 (Previously Presented) A superconductive apparatus comprising a composition having a transition temperature greater than or equal to 26°K, the composition including a rare earth or Group III B element, a transition metal element

capable of exhibiting multivalent states and oxygen, including at least one phase that exhibits superconductivity at temperature greater than or equal to 26°K, a means for maintaining said composition at said temperature to exhibit said superconductivity and means for passing an electrical superconducting current through said composition which exhibiting said superconductivity.

CLAIM 131 (Previously Presented) The combination of claim 15, where said additional element is a rare earth or Group III B element.

CLAIM 132 (Previously Presented) The combination of claim 12, where said composition includes a substantially perovskite superconducting phase.

CLAIM 133 (Previously Presented) The superconducting apparatus of claim 27, where said substituted Cu-oxide includes a rare earth or Group III B element.

CLAIM 134 (Previously Presented) The combination of claim 71, where said mixed copper oxide further includes a rare earth or Group III B element.

CLAIM 135 (Previously Presented) A combination, comprising:

a mixed copper oxide composition including an alkaline earth element (AE) and a rare earth or Group III B element (RE), said composition having a substantially layered crystalline structure and multi-valent oxidation states, said composition exhibiting a substantially zero resistance to the flow of electrical current therethrough when in a superconducting state at a temperature greater than or equal to 26°K, said mixed copper oxide having a superconducting onset temperature greater than or equal to 26°K and,

electrical means for passing an electrical superconducting current through said composition when said composition exhibits substantially zero resistance at a temperature greater than or equal to 26°K and less than said onset temperature.

CLAIM 136 (Previously Presented) The combination of claim 77, where said crystalline structure is substantially perovskite.

CLAIM 137 (Previously Presented) An apparatus comprising:

a composition including a transition metal, a rare earth or Group III B element, an alkaline earth element, and oxygen, where said composition is a mixed transition metal oxide having a non-stoichimetric amount of oxygen therein and exhibiting a superconducting state at a temperature greater than or equal to 26°K,

means for maintaining said composition in said superconducting state at a temperature greater than or equal to 26°K, and less than said superconducting onset temperature, and

means for passing an electrical current through said composition while said composition is in said superconducting state.

CLAIM 138 (Previously Presented) The apparatus of claim 93, where said copper oxide material exhibits a substantially layered crystalline structure.

CLAIM 139 (Previously Presented) A superconductive apparatus for causing electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound having a substantially layered perovskite crystal structure, the composition having a superconductor transition temperature T_c of greater than or equal to 26°K;

(b) means for maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and

(c) means for causing an electric current to flow in the superconductor element.

CLAIM 140 (Previously Presented) A superconductive apparatus for conducting an electric current essentially without resistive losses, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound having a substantially layered perovskite crystal structure, the copper-oxide compound including at least one rare-earth or Group III B element and at least one alkaline-earth element, the composition having a superconductive/resistive transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_{r=o}$, the transition-onset temperature T_c being greater than or equal to 26°K;

(b) means for maintaining the superconductor element at a temperature below the effectively-zero-bulk- resistivity intercept temperature $T_{r=o}$ of the superconductive composition; and

(c) means for causing an electric current to flow in the superconductor element.

CLAIM 141 (Previously Presented) An apparatus comprising a transition metal oxide having a phase therein which exhibits a superconducting state at a critical temperature greater than or equal to 26°K,

a temperature controller maintaining the temperature of said material at a temperature less than said critical temperature to produce said superconducting state in said phase, and

a current source passing an electrical supercurrent through said transition metal oxide while it is in said superconducting state.

CLAIM 142 (Previously Presented) The apparatus of claim 141, where said transition metal oxide is comprised of a transition metal capable of exhibiting multivalent states.

CLAIM 143 (Previously Presented) The apparatus of claim 141, where said transition metal oxide is comprised of a Cu oxide.

CLAIM 144 (Previously Presented) An apparatus comprising:

a composition including a transition metal, a rare earth or rare earth-like element, an alkaline earth element, and oxygen, where said composition is a mixed transition metal oxide having a non-stoichiometric amount of oxygen therein and exhibiting a superconducting state at a temperature greater than or equal to 26°K,

a temperature controller maintaining said composition in said superconducting state at a temperature greater than or equal to 26°K, and

a current source passing an electrical current through said composition while said composition is in said superconducting state.

CLAIM 145 (Previously Presented) The apparatus of claim 144, where said transition metal is copper.

CLAIM 146 (Previously Presented) An apparatus:

a composition exhibiting a superconductive state at a temperature greater than or equal to 26°K,

a temperature controller maintaining said composition at a temperature greater than or equal to 26°K at which temperature said composition exhibits said superconductive state, and

a current source passing an electrical current through said composition while said composition is in said superconductive state.

CLAIM 147 (Previously Presented) The apparatus of claim 146, where said composition is comprised of a metal oxide.

CLAIM 148 (Previously Presented) The apparatus of claim 146, where said composition is comprised of a transition metal oxide.

CLAIM 149 (Previously Presented) A superconductive apparatus for causing electric current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound having a layer-type perovskite-like crystal structure, the composition having a superconductor transition temperature T_c of greater than or equal to 26°K;

(b) a temperature controller maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and

(c) causing an electric current to flow in the superconductor element.

CLAIM 150 (Previously Presented) The superconductive apparatus according to claim 149 in which the copper-oxide compound of the superconductive composition includes at least one rare-earth or rare-earth-like element and at least one alkaline-earth element.

CLAIM 151 (Previously Presented) The superconductive apparatus according to claim 150 in which the rare-earth or rare-earth-like element is lanthanum.

CLAIM 152 (Previously Presented) The superconductive apparatus according to claim 150 in which the alkaline-earth element is barium.

CLAIM 153 (Previously Presented) The superconductive apparatus according to claim 149 in which the copper-oxide compound of the superconductive composition includes mixed valent copper ions.

CLAIM 154 (Previously Presented) The superconductive apparatus according to claim 153 in which the copper-oxide compound includes at least one element in a nonstoichiometric atomic proportion.

CLAIM 155 (Previously Presented) The superconductive apparatus according to claim 154 in which oxygen is present in the copper-oxide compound in a nonstoichiometric atomic proportion.

CLAIM 156 (Previously Presented) A superconductive apparatus for conducting an electric current essentially without resistive losses, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound having a layer-type perovskite-like crystal structure, the copper-oxide compound including at least one rare-earth or rare-earth-like element and at least one alkaline-earth element, the composition having a superconductive/resistive-transition defining a

superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$, the transition-onset temperature T_c being greater than or equal to 26°K;

(b) a temperature controller maintaining the superconductor element at a temperature below the effectively-zero-bulk- resistivity intercept temperature $T_{p=0}$ of the superconductive composition; and

(c) a current source causing an electric current to flow in the superconductor element.

CLAIM 157 (Previously Presented) The superconductive apparatus according to claim 156 in which the rare-earth or rare-earth-like element is lanthanum.

CLAIM 158 (Previously Presented) The superconductive apparatus according to claim 156 in which the alkaline-earth element is barium.

CLAIM 159 (Previously Presented) The superconductive apparatus according to claim 156 in which the copper-oxide compound of the superconductive composition includes mixed valent copper ions.

CLAIM 160 (Previously Presented) The superconductive apparatus according to claim 159 in which the copper-oxide compound includes at least one element in a nonstoichiometric atomic proportion.

CLAIM 161 (Previously Presented) The superconductive apparatus according to claim 160 in which oxygen is present in the copper-oxide compound in a nonstoichiometric atomic proportion.

CLAIM 162 (Previously Presented) An apparatus comprising copper oxide having a phase therein which exhibits a superconducting state at a critical temperature greater than or equal to 26°K;

a temperature controller maintaining the temperature of said material at a temperature less than said critical temperature to produce said superconducting state in said phase;

a current source passing an electrical supercurrent through said copper oxide while it is in said superconducting state;

said copper oxide includes at least one element selected from the group consisting of a Group II A element, a rare earth element and a Group III B element.

CLAIM 163 (Previously Presented) An apparatus comprising:

a composition comprising copper, oxygen and any element selected from the group consisting of a Group II A element, a rare earth element and a Group III B element, where said composition is a mixed copper oxide having a non-stoichiometric amount of oxygen therein and exhibiting a superconducting state at a temperature greater than or equal to 26°K;

a temperature controller maintaining said composition in said superconducting state at a temperature greater than or equal to 26°K; and

a current source passing an electrical current through said composition while said composition is in said superconducting state.

CLAIM 164 (Previously Presented) An apparatus comprising:

a composition exhibiting a superconductive state at a temperature greater than or equal to 26°K;

a temperature controller maintaining said composition at a temperature greater than or equal to 26°K at which temperature said composition exhibits said superconductive state;

a current source passing an electrical current through said composition while said composition is in said superconductive state; and

said composition including a copper oxide and an element selected from the group consisting of Group II A element, a rare earth element and a Group III B element.

CLAIM 165 (Previously Presented) An apparatus for causing electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound having a layer-type perovskite-like crystal structure, the composition having a superconductive transition temperature T_c of greater than or equal to 26°K, said superconductive composition includes at least one element selected from the group consisting of a Group II A element, a rare earth element; and a Group III B element;

(b) a temperature controller maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and

(c) a current source causing an electric current to flow in the superconductor element.

CLAIM 166 (Previously Presented) An apparatus for conducting an electric current essentially without resistive losses, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound having a layer-type perovskite-like crystal structure, the copper-oxide compound including at least one element selected from the group consisting of a Group II A element, a rare earth element and a Group III B element, the composition having a superconductive/resistive transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$, the transition-onset temperature T_c being greater than or equal to 26°K;

(b) a temperature controller maintaining the superconductor element at a temperature below the effectively-zero-bulk- resistivity intercept temperature $T_{p=o}$ of the superconductive composition; and

(c) a current source causing an electric current to flow in the superconductor element.

CLAIM 167 (Previously Presented) An apparatus comprising:

a copper oxide having a phase therein which exhibits a superconducting state at a critical temperature greater than or equal to 26°K;

a temperature controller maintaining the temperature of said material at a temperature less than said critical temperature to produce said superconducting state in said phase;

a current source passing an electrical supercurrent through said copper oxide while it is in said superconducting state;

said copper oxide includes an element selected from the group consisting of a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element.

CLAIM 168 (Previously Presented) An apparatus comprising:

a composition including copper, oxygen and an element selected from the group consisting of at least one Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element, where said composition is a mixed copper oxide having a non-stoichiometric amount of oxygen therein and exhibiting a superconducting state at a temperature greater than or equal to 26°K;

a temperature controller maintaining said composition in said superconducting state at a temperature greater than or equal to 26°K; and

a current source passing an electrical current through said composition while said composition is in said superconducting state.

CLAIM 169 (Previously Presented) An apparatus comprising:

a composition exhibiting a superconductive state at a temperature greater than or equal to 26°K;

a temperature controller maintaining said composition at a temperature greater than or equal to 26°K at which temperature said composition exhibits said superconductive state;

a current source passing an electrical current through said composition while said composition is in said superconductive state; and

said composition including a copper oxide and at least one element selected from the group consisting of Group II A and at least one element selected from the group consisting of a rare earth element and a Group III B element.

CLAIM 170 (Previously Presented) A superconductive apparatus for causing electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound having a layer-type perovskite-like crystal structure, the composition having a superconductive transition temperature T_c of greater than or equal to 26°K, said superconductive composition includes at least one element selected from the group consisting of a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element;

(b) a temperature controller maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and

(c) a current source causing an electric current to flow in the superconductor element.

CLAIM 171 (Previously Presented) A superconductive apparatus for conducting an electric current essentially without resistive losses, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound having a layer-type perovskite-like crystal structure, the copper-oxide compound including at least one element selected from the group consisting of a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element, the composition having a superconductive/resistive transition defining a superconductive-resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$, the transition-onset temperature T_c being greater than or equal to 26°K;

(b) a temperature controller maintaining the superconductor element at a temperature below the effectively-zero-bulk- resistivity intercept temperature $T_{\rho=0}$ of the superconductive composition; and

(c) a current source causing an electric current to flow in the superconductor element.

CLAIM 172 (Previously Presented) An apparatus comprising:

a transition metal oxide having a phase therein which exhibits a superconducting state at a critical temperature greater than or equal to 26°K;

a temperature controller maintaining the temperature of said material at a temperature less than said critical temperature to produce said superconducting state in said phase;

a current source passing an electrical supercurrent through said copper oxide while it is in said superconducting state;

said transitional metal oxide includes at least one element selected from the group consisting of a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element.

CLAIM 173 (Previously Presented) An apparatus comprising:

a composition including a transition metal, oxygen and an element selected from the group consisting of a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element, where said composition is a mixed transitional metal oxide formed from said transition metal and said oxygen, said mixed transition metal oxide having a non-stoichiometric amount of oxygen therein and exhibiting a superconducting state at a temperature greater than or equal to 26°K;

a temperature controller maintaining said composition in said superconducting state at a temperature greater than or equal to 26°K; and

a current source passing an electrical current through said composition while said composition is in said superconducting state.

CLAIM 174 (Previously Presented) An apparatus:

forming a composition exhibiting a superconductive state at a temperature greater than or equal to 26°K;

a temperature controller maintaining said composition at a temperature greater than or equal to 26°K at which temperature said composition exhibits said superconductive state;

a current source passing an electrical current through said composition while said composition is in said superconductive state; and

said composition including a transitional metal oxide and at least one element selected from the group consisting of Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element.

CLAIM 175 (Previously Presented) A superconductive apparatus for causing electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a transition metal oxide compound having a layer-type perovskite-like crystal structure, the composition having a superconductive transition temperature T_c of greater than or equal to 26°K, said

superconductive composition includes an element selected from the group consisting of a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element;

(b) a temperature controller maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition T_c of the superconductive composition; and

(c) a current source causing an electric current to flow in the superconductor element.

CLAIM 176 (Previously Presented) A superconductive apparatus for conducting an electric current essentially without resistive losses, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a transition metal-oxide compound having a layer-type perovskite-like crystal structure, the transition metal-oxide compound including at least one element selected from the group consisting of a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element, the composition having a superconductive/resistive transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$, the transition-onset temperature T_c being greater than or equal to 26°K;

(b) a temperature controller maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$ of the superconductive composition; and

(c) a current source causing an electric current to flow in the superconductor element.

CLAIM 177 (Previously Presented) An apparatus comprising:

a copper oxide having a phase therein which exhibits a superconducting state at a critical temperature greater than or equal to 26°K;

a temperature controller maintaining the temperature of said material at a temperature less than said critical temperature to produce said superconducting state in said phase;

a current source passing an electrical supercurrent through said copper oxide while it is in said superconducting state;

said copper oxide includes at least one Group II A element, and at least one element selected from the group consisting of a rare earth element and a Group III B element.

CLAIM 178 (Previously Presented) An apparatus comprising:

a composition including copper, oxygen, a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element, where said composition is a mixed copper oxide having a non-stoichiometric amount of oxygen therein and exhibiting a superconducting state at a temperature greater than or equal to 26°K;

a temperature controller maintaining said composition in said superconducting state at a temperature greater than or equal to 26°K; and

a current source passing an electrical current through said composition while said composition is in said superconducting state.

CLAIM 179 (Previously Presented) A structure comprising:

a composition exhibiting a superconductive state at a temperature greater than or equal to 26°K;

a temperature controller maintaining said composition at a temperature greater than or equal to 26°K at which temperature said composition exhibits said superconductive state;

a current source passing an electrical current through said composition while said composition is in said superconductive state; and

said composition including a copper oxide, a Group II A element, at least one element selected from the group consisting of a rare earth element and a Group III B element.

CLAIM 180 (Previously Presented) A superconductive apparatus for causing electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound having a layer-type perovskite-like crystal structure, the composition having a superconductive transition temperature T_c of greater than or equal to 26°K, said superconductive composition includes a Group II A element, and at least one element selected from the group consisting of a rare earth element and a Group III B element;

(b) a temperature controller maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and

(c) a current source causing an electric current to flow in the superconductor element.

CLAIM 181 (Previously Presented) A superconductive apparatus for conducting an electric current essentially without resistive losses, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound having a layer-type perovskite-like crystal structure, the copper-oxide compound including Group II A element, and at least one element selected from the group consisting of a rare earth element and a Group III B element, the composition having a superconductive-resistive transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$, the transition-onset temperature T_c being greater than or equal to 26°K;

(b) a temperature controller maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$ of the superconductive composition; and

(c) a current source causing an electric current to flow in the superconductor element.

CLAIM 182 (Previously Presented) An apparatus comprising a composition having a transition temperature greater than or equal to 26°K, the composition including a rare earth or alkaline earth element, a transition metal element capable of exhibiting multivalent states and oxygen, including at least one phase that exhibits superconductivity at temperature greater than or equal to 26°K, a temperature controller maintaining said composition at said temperature to exhibit said superconductivity and a current source passing an electrical superconducting current through said composition with said phrase exhibiting said superconductivity.

CLAIM 183 (Previously Presented) An apparatus comprising a superconducting transition metal oxide having a superconductive onset temperature greater than or equal to 26°K, a temperature controller maintaining said superconducting transition

metal oxide at a temperature less than said superconducting onset temperature and a current source flowing a superconducting current therein.

CLAIM 184 (Previously Presented) An apparatus comprising a superconducting copper oxide having a superconductive onset temperature greater than or equal to 26°K, a temperature controller maintaining said superconducting copper oxide at a temperature less than said superconducting onset temperature and a current source flowing a superconducting current in said superconducting oxide.

CLAIM 185 (Previously Presented) An apparatus comprising a superconducting oxide composition having a superconductive onset temperature greater than or equal to 26°K, a temperature controller maintaining said superconducting copper oxide at a temperature less than said superconducting onset temperature and a current source flowing a superconducting current therein, said composition comprising at least one each of rare earth, an alkaline earth, and copper.

CLAIM 186 (Previously Presented) An apparatus comprising a superconducting oxide composition having a superconductive onset temperature greater than or equal to 26°K, a temperature controller maintaining said superconducting copper oxide at a temperature less than said superconducting onset temperature and a current source flowing a superconducting electrical current therein, said composition comprising at least one each of a Group III B element, an alkaline earth, and copper.

CLAIM 187 (Previously Presented) An apparatus comprising a superconducting electrical current in a transition metal oxide having a T_c greater than or equal to 26°K and maintaining said transition metal oxide at a temperature less than said T_c.

CLAIM 188 (Previously Presented) An apparatus comprising a current source flowing a superconducting current in a copper oxide having a T_c greater than or equal to 26°K and a temperature controller maintaining said copper oxide at a temperature less than said T_c.

CLAIM 189 (Previously Presented) An apparatus comprising:

a composition of the formula $BaLa_{5-x}Cu_5O_{5(3-y)}$, wherein x is from about 0.75 to about 1 and y is the oxygen deficiency resulting from annealing said composition at temperatures from about 540°C to about 950°C and for times of about 15 minutes to about 12 hours, said composition having a metal oxide phase which exhibits a superconducting state at a critical temperature greater than or equal to 26°K;

a temperature controller maintaining the temperature of said composition at a temperature less than said critical temperature to induce said superconducting state in said metal oxide phase; and

a current source passing an electrical current through said composition while said metal oxide phase is in said superconducting state.

CLAIM 190 (Previously Presented) An apparatus comprising a current source flowing a superconducting electrical current in a composition of matter having a T_c greater than or equal to 26°K, said composition comprising at least one each of a Group III B element, an alkaline earth, and copper oxide and a temperature controller maintaining said composition of matter at a temperature less than T_c.

CLAIM 191 (Previously Presented) An apparatus comprising a current source flowing a superconducting electrical current in a composition of matter having a T_c greater than or equal to 26°K, said composition comprising at least one each of a rare earth, alkaline earth, and copper oxide and a temperature controller maintaining said composition of matter at a temperature less than said T_c.

CLAIM 192 (Previously Presented) An apparatus comprising a current source flowing a superconducting electrical current in a composition of matter having a T_c greater than or equal to 26°K, said composition comprising at least one each of a rare earth, and

copper oxide and a temperature controller maintaining said composition of matter at a temperature less than said T_c.

CLAIM 193 (Previously Presented) An apparatus comprising a current source flowing a superconducting electrical current in a composition of matter having a T_c greater than or equal to 26°K carrying, said composition comprising at least one each of a Group III B element, and copper oxide and a temperature controller maintaining said composition of matter at a temperature less than said T_c.

CLAIM 194 (Previously Presented) An apparatus comprising a current source flowing a superconducting electrical current in a transition metal oxide comprising a T_c greater than or equal to 26°K and a temperature controller maintaining said transition metal oxide at a temperature less than said T_c.

CLAIM 195 (Previously Presented) An apparatus comprising a current source flowing a superconducting electrical current in a copper oxide composition of matter comprising a T_c greater than or equal to 26°K and a temperature controller maintaining said copper oxide composition of matter at a temperature less than said T_c.

CLAIM 196 (Previously Presented) An apparatus comprising:

a composition including a transition metal, a Group III B element, an alkaline earth element, and oxygen, where said composition is a mixed transition metal oxide having a non-stoichiometric amount of oxygen therein and exhibiting a superconducting state at a temperature greater than or equal to 26°K,

a temperature controller maintaining said composition in said superconducting state at a temperature greater than or equal to 26°K, and

a current source passing an electrical current through said composition while said composition is in said superconducting state.

CLAIM 197 (Previously Presented) The apparatus of claim 196, where said transition metal is copper.

CLAIM 198 (Previously Presented) A superconductive apparatus for causing electric current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound having a substantially layered perovskite crystal structure, the composition having a superconductor transition temperature T_c of greater than or equal to 26°K;

(b) a temperature controller maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and

(c) a current source causing an electric current to flow in the superconductor element.

CLAIM 199 (Previously Presented) The superconductive apparatus according to claim 198 in which the copper-oxide compound of the superconductive composition includes at least one element selected from the group consisting of a rare-earth element, a Group III B element and an alkaline-earth element.

CLAIM 200 (Previously Presented) The superconductive apparatus according to claim 199 in which the rare-earth is lanthanum.

CLAIM 201 (Previously Presented) The superconductive apparatus according to claim 199 in which the alkaline-earth element is barium.

CLAIM 202 (Previously Presented) The superconductive apparatus according to claim 198 in which the copper-oxide compound of the superconductive composition includes mixed valent copper ions.

CLAIM 203 (Previously Presented) The superconductive apparatus according to claim 202 in which the copper-oxide compound includes at least one element in a nonstoichiometric atomic proportion.

CLAIM 204 (Previously Presented) The superconductive apparatus according to claim 203 in which oxygen is present in the copper-oxide compound in a nonstoichiometric atomic proportion.

CLAIM 205 (Previously Presented) A superconductive apparatus for conducting an electric current essentially without resistive losses, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound having a substantially layered perovskite crystal structure, the copper-oxide compound including at least one element selected from the group consisting of a rare-earth element, a Group III B element and an alkaline-earth element, the composition having a superconductive/resistive transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_{\rho=0}$, the transition-onset temperature T_c being greater than or equal to 26°K;

(b) a temperature controller maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_{\rho=0}$ of the superconductive composition; and

(c) a current source causing an electric current to flow in the superconductor element.

CLAIM 206 (Previously Presented) The superconductive apparatus according to claim 205 in which said at least one element is lanthanum.

CLAIM 207 (Previously Presented) The superconductive apparatus according to claim 205 in which the alkaline-earth element is barium.

CLAIM 208 (Previously Presented) The superconductive apparatus according to claim 205 in which the copper-oxide compound of the superconductive composition includes mixed valent copper ions.

CLAIM 209 (Previously Presented) The superconductive apparatus according to claim 208 in which the copper-oxide compound includes at least one element in a nonstoichiometric atomic proportion.

CLAIM 210 (Previously Presented) The superconductive apparatus according to claim 209 in which oxygen is present in the copper-oxide compound in a nonstoichiometric atomic proportion.

CLAIM 211 (Previously Presented) A superconductive apparatus for causing electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound having a substantially layered perovskite crystal structure, the composition having a superconductive transition temperature T_c of greater than or equal to 26°K, said superconductive composition includes at least one element selected from the group consisting of a Group II A element, a rare earth element; and a Group III B element;

(b) a temperature controller maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and

(c) a current source causing an electric current to flow in the superconductor element.

CLAIM 212 (Previously Presented) A superconductive apparatus for conducting an electric current essentially without resistive losses, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound having a substantially layered perovskite crystal structure, the copper-oxide compound including at least one element selected from the group consisting of a Group II A element, a rare earth element and a Group III B element, the composition having a superconductive/resistive transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$, the transition-onset temperature T_c being greater than or equal to 26°K;

(b) a temperature controller maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$ of the superconductive composition; and

(c) a current source causing an electric current to flow in the superconductor element.

CLAIM 213 (Previously Presented) A superconductive apparatus for causing electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound having

a substantially layered perovskite crystal structure, the composition having a superconductive transition temperature T_c of greater than or equal to 26°K, said superconductive composition includes a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element;

(b) a temperature controller maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and

(c) a current source causing an electric current to flow in the superconductor element.

CLAIM 214 (Previously Presented) A superconductive apparatus for conducting an electric current essentially without resistive losses, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound having a substantially layered perovskite crystal structure, the copper-oxide compound including a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element, the composition having a superconductive/resistive transition defining a superconductive-resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$, the transition-onset temperature T_c being greater than or equal to 26°K;

(b) a temperature controller maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$ of the superconductive composition; and

(c) a current source causing an electric current to flow in the superconductor element.

CLAIM 215 (Previously Presented) A superconductive apparatus for causing electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a transition metal oxide compound having a substantially layered perovskite crystal structure, the composition having a superconductive transition temperature T_c of greater than or equal to 26°K, said superconductive composition includes a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element;

(b) a temperature controller maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition T_c of the superconductive composition; and

(c) a current source causing an electric current to flow in the superconductor element.

CLAIM 216 (Previously Presented) A superconductive apparatus for conducting an electric current essentially without resistive losses, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a transition metal-oxide compound having a substantially layered perovskite crystal structure, the transition metal-oxide compound including a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element, the composition having a superconductive/resistive transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$, the transition-onset temperature T_c being greater than or equal to 26°K;

(b) a temperature controller maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$ of the superconductive composition; and

(c) a current source causing an electric current to flow in the superconductor element.

CLAIM 217 (Previously Presented) An apparatus according to claim 182 wherein said composition comprises a substantially layered perovskite crystal structure.

CLAIM 218 (Previously Presented) An apparatus according to claim 183 wherein said superconducting transistor metal oxide comprises a substantially layered perovskite crystal structure.

CLAIM 219 (Previously Presented) An apparatus according to claim 184 wherein said superconducting copper oxide comprises a substantially layered perovskite crystal structure.

CLAIM 220 (Previously Presented) An apparatus according to claim 185 wherein said superconducting oxide composition comprises a substantially layered perovskite crystal structure.

CLAIM 221 (Previously Presented) An apparatus according to claim 186 wherein said superconducting oxide composition comprises a substantially layered perovskite crystal structure.

CLAIM 222 (Previously Presented) An apparatus according to claim 187 wherein said transistor metal oxide comprises a substantially layered perovskite crystal structure.

CLAIM 223 (Previously Presented) An apparatus according to claim 188 wherein said copper oxide comprises a substantially layered perovskite crystal structure.

CLAIM 224 (Previously Presented) An apparatus according to claim 189 wherein said composition comprises a substantially layered perovskite crystal structure.

CLAIM 225 (Previously Presented) An apparatus according to claim 190 wherein said composition of matter comprises a substantially layered perovskite crystal structure.

CLAIM 226 (Previously Presented) An apparatus according to claim 191 wherein said composition of matter comprises substantially layered perovskite crystal structure.

CLAIM 227 (Previously Presented) An apparatus according to claim 192 wherein said composition of matter comprises a substantially layered perovskite crystal structure.

CLAIM 228 (Previously Presented) An apparatus according to claim 193 wherein said composition of matter comprises substantially layered perovskite crystal structure.

CLAIM 229 (Previously Presented) An apparatus according to claim 194 wherein said transistor metal oxide comprises substantially layered perovskite crystal structure.

CLAIM 230 (Previously Presented) An apparatus according to claim 195 wherein said copper oxide composition comprises substantially layered perovskite crystal structure.

CLAIM 231 (Previously Presented) An apparatus comprising a composition of matter having a T_c greater than or equal to 26°K carrying a superconducting current, said composition comprising at least one each of a rare earth, an alkaline earth, and copper oxide.

CLAIM 232 (Previously Presented) An apparatus comprising:

a transition metal oxide comprising a phase therein which exhibits a superconducting state at a critical temperature greater than or equal to 26°K,

a temperature controller for maintaining the temperature of said material at a temperature less than said critical temperature to produce said superconducting state in said phase, and

a source of an electrical supercurrent through said transition metal oxide while it is in said superconducting state.

CLAIM 233 (Previously Presented) An apparatus according to claim 232, where said transition metal oxide is comprised of a transition metal capable of exhibiting multivalent states.

CLAIM 234 (Previously Presented) An apparatus according to claim 232, where said transition metal oxide is comprised of a Cu oxide.

CLAIM 235 (Previously Presented) An apparatus comprising:

a composition including a transition metal, a rare earth or rare earth-like element, an alkaline earth element, and oxygen, where said composition is a mixed transition metal oxide comprising a non-stoichiometric amount of oxygen therein and exhibiting a superconducting state at a temperature greater than or equal to 26°K,

a temperature controller for maintaining said composition in said superconducting state at a temperature greater than or equal to 26°K, and

a source of an electrical current through said composition while said composition is in said superconducting state.

CLAIM 236 (Previously Presented) An apparatus according to claim 235, where said transition metal is copper.

CLAIM 237 (Previously Presented) An apparatus comprising:

a composition exhibiting a superconductive state at a temperature greater than or equal to 26°K, a temperature controller for maintaining said composition at a temperature greater than or equal to 26°K at which temperature said composition exhibits said superconductive state, and

a source of an electrical current through said composition while said composition is in said superconductive state.

CLAIM 238 (Previously Presented) An apparatus according to claim 237, where said composition is comprised of a metal oxide.

CLAIM 239 (Previously Presented) An apparatus according to claim 238, where said composition is comprised of a transition metal oxide.

CLAIM 240 (Previously Presented) An apparatus capable of carrying electric current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a layer-type perovskite-like crystal structure, the composition comprising a superconductor transition temperature T_c of greater than or equal to 26°K;

(b) a temperature controller for maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and

(c) a source of an electric current to flow in the superconductor element.

CLAIM 241 (Previously Presented) An apparatus according to claim 240 in which the copper-oxide compound of the superconductive composition includes at least one rare-earth or rare-earth-like element and at least one alkaline-earth element.

CLAIM 242 (Previously Presented) An apparatus according to claim 241 in which the rare-earth or rare-earth-like element is lanthanum.

CLAIM 243 (Previously Presented) An apparatus according to claim 241 in which the alkaline-earth element is barium.

CLAIM 244 (Previously Presented) An apparatus according to claim 240 in which the copper-oxide compound of the superconductive composition includes mixed valent copper ions.

CLAIM 245 (Previously Presented) An apparatus according to claim 244 in which the copper-oxide compound includes at least one element in a nonstoichiometric atomic proportion.

CLAIM 246 (Previously Presented) An apparatus according to claim 245 in which oxygen is present in the copper-oxide compound in a nonstoichiometric atomic proportion.

CLAIM 247 (Previously Presented) An apparatus for conducting an electric current essentially without resistive losses, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a layer-type perovskite-like crystal structure, the copper-oxide compound including at least one rare-earth or rare-earth-like element and at least one alkaline-earth element, the composition comprising a superconductive/resistive transition

defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$, the transition-onset temperature T_c being greater than or equal to 26°K;

(b) a temperature controller for maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$ of the superconductive composition; and

(c) a source of an electric current to flow in the superconductor element.

CLAIM 248 (Previously Presented) An apparatus according to claim 247 in which the rare-earth or rare-earth-like element is lanthanum.

CLAIM 249 (Previously Presented) An apparatus according to claim 247 in which the alkaline-earth element is barium.

CLAIM 250 (Previously Presented) An apparatus according to claim 247 in which the copper-oxide compound of the superconductive composition includes mixed valent copper ions.

CLAIM 251 (Previously Presented) An apparatus according to claim 250 in which the copper-oxide compound includes at least one element in a nonstoichiometric atomic proportion.

CLAIM 252 (Previously Presented) An apparatus according to claim 251 in which oxygen is present in the copper-oxide compound in a nonstoichiometric atomic proportion.

CLAIM 253 (Previously Presented) An apparatus comprising:

a copper oxide comprising a phase therein which exhibits a superconducting state at a critical temperature greater than or equal to 26°K;

a temperature controller for maintaining the temperature of said material at a temperature less than said critical temperature to produce said superconducting state in said phase;

a source of an electrical supercurrent through said copper oxide while it is in said superconducting state;

said copper oxide includes at least one element selected from the group consisting of a Group II A element, a rare earth element and a Group III B element.

CLAIM 254 (Previously Presented) An apparatus comprising:

a composition including copper, oxygen and an element selected from the group consisting of a Group II A element, a rare earth element and a Group III B element, where said composition is a mixed copper oxide comprising a non-stoichiometric amount of oxygen therein and exhibiting a superconducting state at a temperature greater than or equal to 26°K;

a temperature controller for maintaining said composition in said superconducting state at a temperature greater than or equal to 26°K; and

a source of an electrical current through said composition while said composition is in said superconducting state.

CLAIM 255 (Previously Presented) An apparatus comprising:

a composition exhibiting a superconductive state at a temperature greater than or equal to 26°K;

a temperature controller for maintaining said composition at a temperature greater than or equal to 26°K at which temperature said composition exhibits said superconductive state;

a source of an electrical current through said composition while said composition is in said superconductive state; and

said composition including a copper oxide and an element selected from the group consisting of Group II A element, a rare earth element and a Group III B element.

CLAIM 256 (Previously Presented) An apparatus capable of carrying an electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a layer-type perovskite-like crystal structure, the composition comprising a superconductive transition temperature T_c of greater than or equal to 26°K, said superconductive composition includes at least one element selected from the group consisting of a Group II A element, a rare earth element; and a Group III B element;

(b) a temperature controller for maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and

(c) a source of an electric current to flow in the superconductor element.

CLAIM 257 (Previously Presented) An apparatus capable of carrying an electric current essentially without resistive losses, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a layer-type perovskite-like crystal structure, the copper-oxide compound including at least one element selected from the group consisting of a Group II A element, a rare earth element and a Group III B element, the composition comprising a superconductive/resistive transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$, the transition-onset temperature T_c being greater than or equal to 26°K;

(b) a temperature controller for maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$ of the superconductive composition; and

(c) a source of an electric current to flow in the superconductor element.

CLAIM 258 (Previously Presented) An apparatus comprising:

a copper oxide comprising a phase therein which exhibits a superconducting state at a critical temperature greater than or equal to 26°K;

a temperature controller for maintaining the temperature of said material at a temperature less than said critical temperature to produce said superconducting state in said phase;

a source of an electrical supercurrent through said copper oxide while it is in said superconducting state;

said copper oxide includes at least one element selected from the group consisting of a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element.

CLAIM 259 (Previously Presented) An apparatus comprising:

a composition including copper, oxygen and an element selected from the group consisting of at least one Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element, where said composition is a mixed copper oxide comprising a non-stoichiometric amount of oxygen therein and exhibiting a superconducting state at a temperature greater than or equal to 26°K;

a temperature for maintaining said composition in said superconducting state at a temperature greater than or equal to 26°K; and

a source of an electrical current through said composition while said composition is in said superconducting state.

CLAIM 260 (Previously Presented) An apparatus comprising:

a composition exhibiting a superconductive state at a temperature greater than or equal to 26°K;

a temperature for maintaining said composition at a temperature greater than or equal to 26°K at which temperature said composition exhibits said superconductive state;

a source of an electrical current through said composition while said composition is in said superconductive state; and

said composition including a copper oxide and at least one element selected from the group consisting of Group II A and at least one element selected from the group consisting of a rare earth element and a Group III B element.

CLAIM 261 (Previously Presented) An apparatus capable of carrying an electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a layer-type perovskite-like crystal structure, the composition comprising a superconductive transition temperature T_c of greater than or equal to 26°K, said superconductive composition includes at least one element selected from the group consisting of a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element;

(b) a temperature controller for maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and

(c) a source of an electric current to flow in the superconductor element.

CLAIM 262 (Previously Presented) An apparatus for conducting an electric current essentially without resistive losses, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a layer-type perovskite-like crystal structure, the copper-oxide compound including at least one element selected from the group consisting of a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element, the composition comprising a superconductive/resistive transition defining a superconductive-resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$, the transition-onset temperature T_c being greater than or equal to 26°K;

(b) a temperature controller for maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_{\rho=0}$ of the superconductive composition; and

(c) a source of an electric current to flow in the superconductor element.

CLAIM 263 (Previously Presented) An apparatus comprising:

a transition metal oxide comprising a phase therein which exhibits a superconducting state at a critical temperature greater than or equal to 26°K;

a temperature controller for maintaining the temperature of said material at a temperature less than said critical temperature to produce said superconducting state in said phase;

a source of an electrical supercurrent through said transition metal oxide while it is in said superconducting state;

said transitional metal oxide includes at least one element selected from the group consisting of a Group II A element and at lest one element selected from the group consisting of a rare earth element and a Group III B element.

CLAIMS 264 (Previously Presented) An apparatus comprising:

a composition including a transition metal, oxygen and an element selected from the group consisting of at least one Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element, where said composition is a mixed transitional metal oxide formed from said transition metal and said oxygen, said mixed transition metal oxide comprising a non-stoichiometric amount

of oxygen therein and exhibiting a superconducting state at a temperature greater than or equal to 26°K;

a temperature controller for maintaining said composition in said superconducting state at a temperature greater than or equal to 26°K; and

a source of an electrical current through said composition while said composition is in said superconducting state.

CLAIM 265 (Previously Presented) An apparatus comprising:

a composition exhibiting a superconductive state at a temperature greater than or equal to 26°K;

a temperature controller for maintaining said composition at a temperature greater than or equal to 26°K at which temperature said composition exhibits said superconductive state;

a source of an electrical current through said composition while said composition is in said superconductive state; and

said composition including a transitional metal oxide and at least one element selected from the group consisting of Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element.

CLAIM 266 (Previously Presented) An apparatus capable of carrying an electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a transition metal oxide

compound comprising a layer-type perovskite-like crystal structure, the composition comprising a superconductive transition temperature T_c of greater than or equal to 26°K, said superconductive composition includes at least one element selected from the group consisting of a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element;

(b) a temperature controller for maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition T_c of the superconductive composition; and

(c) a source of an electric current to flow in the superconductor element.

CLAIM 267 (Previously Presented) An apparatus for conducting an electric current essentially without resistive losses, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a transition metal-oxide compound comprising a layer-type perovskite-like crystal structure, the transition metal-oxide compound including at least one element selected from the group consisting of a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element, the composition comprising a superconductive/resistive transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$, the transition-onset temperature T_c being greater than or equal to 26°K;

(b) a temperature controller for maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$ of the superconductive composition; and

(c) a source of an electric current to flow in the superconductor element.

CLAIM 268 (Previously Presented) An apparatus comprising:

a copper oxide comprising a phase therein which exhibits a superconducting state at a critical temperature greater than or equal to 26°K;

a temperature controller for maintaining the temperature of said material at a temperature less than said critical temperature to produce said superconducting state in said phase;

a source for an electrical supercurrent through said copper oxide while it is in said superconducting state;

said copper oxide includes at least one element selected from group consisting of a Group II A element, at least one element selected from the group consisting of a rare earth element and at least one element selected from the group consisting of a Group III B element.

CLAIM 269 (Previously Presented) An apparatus comprising:

a composition including copper, oxygen and an element selected from the group consisting of at least one Group II A element and at least one element selected from the group consisting of a rare earth element at least one element selected from the group consisting of a Group III B element, where said composition is a mixed copper oxide comprising a non-stoichiometric amount of oxygen therein and exhibiting a superconducting state at a temperature greater than or equal to 26°K;

a temperature controller for maintaining said composition in said superconducting state at a temperature greater than or equal to 26°K; and

a source of an electrical current through said composition while said composition is in said superconducting state.

CLAIM 270 (Previously Presented) An apparatus comprising:

a composition exhibiting a superconductive state at a temperature greater than or equal to 26°K;

a temperature controller for maintaining said composition at a temperature greater than or equal to 26°K at which temperature said composition exhibits said superconductive state;

a source of an electrical current through said composition while said composition is in said superconductive state; and

said composition including a copper oxide and at least one element selected from the group consisting of Group II A element, at least one element selected from the group consisting of a rare earth element and at least one element selected from the group consisting of a Group III B element.

CLAIM 271 (Previously Presented) An apparatus for causing an electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a layer-type perovskite-like crystal structure, the composition comprising a superconductive transition temperature T_c of greater than or equal to 26°K, said superconductive composition includes at least one element selected from the group consisting of a Group II A element, at least one element selected from the group consisting of a rare earth element and at least one element selected from the group consisting of a Group III B element;

(b) a temperature controller for maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and

(c) a source of an electric current to flow in the superconductor element.

CLAIM 272 (Previously Presented) An apparatus for conducting an electric current essentially without resistive losses, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a layer-type perovskite-like crystal structure, the copper-oxide compound including at least one element selected from the group consisting of a group II A element, at least one element selected from the group consisting of a rare earth element and at least one element selected from the group consisting of a Group III B element, the composition comprising a superconductive-resistive transition temperature defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$, the transition-onset temperature T_c being greater than or equal to 26°K;

(b) a temperature controller for maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$ of the superconductive composition; and

(c) a source of an electric current to flow in the superconductor element.

CLAIM 273 (Previously Presented) An apparatus comprising a composition comprising a transition temperature greater than or equal to 26°K, the composition including a rare earth or alkaline earth element, a transition metal element capable of exhibiting

multivalent states and oxygen, including at least one phase that exhibits superconductivity at temperature greater than or equal to 26°K, a temperature controller for maintaining said composition at said temperature to exhibit said superconductivity and a source of an electrical superconducting current through said composition with said phrase exhibiting said superconductivity.

CLAIM 274 (Previously Presented) An apparatus comprising providing a superconducting transition metal oxide comprising a superconductive onset temperature greater than or equal to 26°K, a temperature controller for maintaining said superconducting transition metal oxide at a temperature less than said superconducting onset temperature and a source of a superconducting current therein.

CLAIM 275 (Previously Presented) An apparatus comprising a superconducting copper oxide comprising a superconductive onset temperature greater than or equal to 26°K, a temperature controller for maintaining said superconducting copper oxide at a temperature less than said superconducting onset temperature and a source of a superconducting current in said superconducting oxide.

CLAIM 276 (Previously Presented) An apparatus comprising a superconducting oxide composition comprising a superconductive onset temperature greater than or equal to 26°K , a temperature controller for maintaining said superconducting copper oxide at a temperature less than said superconducting onset temperature and a source of a superconducting current therein, said composition comprising at least one each of rare earth, an alkaline earth, and copper.

CLAIM 277 (Previously Presented) An apparatus comprising a superconducting oxide composition comprising a superconductive onset temperature greater than or equal to 26°K, a temperature controller for maintaining said superconducting copper oxide at a temperature less than said superconducting onset temperature and a source of a superconducting electrical current therein, said composition comprising at least one each of a Group III B element, an alkaline earth, and copper.

CLAIM 278 (Previously Presented) An apparatus comprising a source of a superconducting electrical current in a transition metal oxide comprising a T_c greater than or equal to 26°K and a temperature controller for maintaining said transition metal oxide at a temperature less than said T_c.

CLAIM 279 (Previously Presented) An apparatus comprising a source of a superconducting current in a copper oxide comprising a T_c greater than or equal to 26°K and a temperature controller for maintaining said copper oxide at a temperature less than said T_c.

CLAIM 280 (Previously Presented) An apparatus comprising:

a composition of the formula Ba_xLa_{x-5}, Cu_5O_Y, wherein x is from about 0.75 to about 1 and y is the oxygen deficiency resulting from annealing said composition at temperatures from about 540°C to about 950°C and for times of about 15 minutes to about 12 hours, said composition comprising a metal oxide phase which exhibits a superconducting state at a critical temperature greater than or equal to 26°K;

a temperature controller for maintaining the temperature of said composition at a temperature less than said critical temperature to induce said superconducting state in said metal oxide phase; and

a source of an electrical current through said composition while said metal oxide phase is in said superconducting state.

CLAIM 281 (Previously Presented) An apparatus comprising a source of a superconducting electrical current in a composition of matter comprising a T_c greater than or equal to 26°K, said composition comprising at least one each of a III B element, an alkaline earth, and copper oxide and a temperature controller for maintaining said composition of matter at a temperature less than T_c.

CLAIM 282 (Previously Presented) An apparatus comprising a source of a superconducting electrical current in a composition of matter comprising a T_c greater than or equal to 26°K, said composition comprising at least one each of a rare earth, alkaline earth, and copper oxide and a temperature controller for maintaining said composition of matter at a temperature less than said T_c.

CLAIM 283 (Previously Presented) An apparatus comprising a source of a superconducting electrical current in a composition of matter comprising a T_c greater than or equal to 26°K, said composition comprising at least one each of a rare earth, and copper oxide and a temperature controller for maintaining said composition of matter at a temperature less than said T_c.

CLAIM 284 (Previously Presented) An apparatus comprising a source of a superconducting electrical current in a composition of matter comprising a T_c greater than or equal to 26°K carrying, said composition comprising at least one each of a III B element, and copper oxide and a temperature controller for maintaining said composition of matter at a temperature less than said T_c.

CLAIM 285 (Previously Presented) An apparatus comprising a source of a superconducting electrical current in a transition metal oxide comprising a T_c greater than or equal to 26°K and a temperature controller for maintaining said transition metal oxide at a temperature less than said T_c.

CLAIM 286 (Previously Presented) An apparatus comprising a source of a superconducting electrical current in a copper oxide composition of matter comprising a T_c greater than or equal to 26°K and a temperature controller for maintaining said copper oxide composition of matter at a temperature less than said T_c.

CLAIM 287 (Previously Presented) An apparatus comprising:

a composition including a transition metal, a group IIIB element, an alkaline earth element, and oxygen, where said composition is a mixed transition metal oxide comprising a non-stoichiometric amount of oxygen therein and exhibiting a superconducting state at a temperature greater than or equal to 26°K,

a temperature controller for maintaining said composition in said superconducting state at a temperature greater than or equal to 26°K, and

a source of an electrical current through said composition while said composition is in said superconducting state.

CLAIM 288 (Previously Presented) An apparatus according to claim 287, where said transition metal is copper.

CLAIM 289 (Previously Presented) An apparatus for causing electric current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a substantially layered perovskite crystal structure, the composition comprising a superconductor transition temperature T_c of greater than or equal to 26°K;

b) a temperature controller for maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and

(c) a source of an electric current to flow in the superconductor element.

CLAIM 290 (Previously Presented) An apparatus according to claim 289 in which the copper-oxide compound of the superconductive composition includes at least one

element selected from the group consisting of a rare-earth element and a Group III B element and at least one alkaline-earth element.

CLAIM 291 (Previously Presented) An apparatus according to claim 290 in which the rare-earth or element is lanthanum.

CLAIM 292 (Previously Presented) An apparatus according to claim 290 in which the alkaline-earth element is barium.

CLAIM 293 (Previously Presented) An apparatus according to claim 289 in which the copper-oxide compound of the superconductive composition includes mixed valent copper ions.

CLAIM 294 (Previously Presented) An apparatus according to claim 293 in which the copper-oxide compound includes at least one element in a nonstoichiometric atomic proportion.

CLAIM 295 (Previously Presented) An apparatus according to claim 294 in which oxygen is present in the copper-oxide compound in a nonstoichiometric atomic proportion.

CLAIM 296 (Previously Presented) An apparatus for conducting an electric current essentially without resistive losses, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a substantially layered perovskite crystal structure, the copper-oxide compound including at least one element selected from the group consisting of a rare-earth element and a Group III B element and at least one alkaline-earth element, the composition comprising a superconductive/resistive transition defining a superconductive/resistive-transition temperature range between an upper limit defined

by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$, the transition-onset temperature T_c being greater than or equal to 26°K;

(b) a temperature controller for maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$ of the superconductive composition; and

(c) a source of an electric current to flow in the superconductor element.

CLAIM 297 (Previously Presented) An apparatus according to claim 296 in which said at least one element is lanthanum.

CLAIM 298 (Previously Presented) An apparatus according to claim 296 in which the alkaline-earth element is barium.

CLAIM 299 (Previously Presented) An apparatus according to claim 296 in which the copper-oxide compound of the superconductive composition includes mixed valent copper ions.

CLAIM 300 (Previously Presented) An apparatus according to claim 299 in which the copper-oxide compound includes at least one element in a nonstoichiometric atomic proportion.

CLAIM 301 (Previously Presented) An apparatus according to claim 300 in which oxygen is present in the copper-oxide compound in a nonstoichiometric atomic proportion.

CLAIM 302 (Previously Presented) An apparatus for causing electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a substantially layered perovskite crystal structure, the composition comprising a superconductive transition temperature T_c of greater than or equal to 26°K, said superconductive composition includes at least one element selected from the group consisting of a Group II A element, a rare earth element; and a Group III B element;

(b) a temperature controller for maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and

(c) a source of an electric current to flow in the superconductor element.

CLAIM 303 (Previously Presented) An apparatus for conducting an electric current essentially without resistive losses, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a substantially layered perovskite crystal structure, the copper-oxide compound including at least one element selected from the group consisting of a Group II A element, a rare earth element and a Group III B element, the composition comprising a superconductive/resistive transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$, the transition-onset temperature T_c being greater than or equal to 26°K;

(b) a temperature controller for maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$ of the superconductive composition; and

(c) a source of an electric current to flow in the superconductor element.

CLAIM 304 (Previously Presented) An apparatus for causing electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a substantially layered perovskite crystal structure, the composition comprising a superconductive transition temperature T_c of greater than or equal to 26°K, said superconductive composition includes at least one element selected from the group consisting of a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element;

(b) a temperature controller for maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and

(c) a source of an electric current to flow in the superconductor element.

CLAIM 305 (Previously Presented) An apparatus for conducting an electric current essentially without resistive losses, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a substantially layered perovskite crystal structure, the copper-oxide compound including at least one element selected from the group consisting of a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element, the composition comprising a superconductive/resistive transition defining a superconductive-resistive-transition temperature range between an upper limit defined by a transition-onset temperature Tc

and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$, the transition-onset temperature T_c being greater than or equal to 26°K;

(b) a temperature controller for maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$ of the superconductive composition; and

(c) a source of an electric current to flow in the superconductor element.

CLAIM 306 (Previously Presented) An apparatus for causing electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a transition metal oxide compound comprising a substantially layered perovskite crystal structure, the composition comprising a superconductive transition temperature T_c of greater than or equal to 26°K, said superconductive composition includes at least one element selected from the group consisting of a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element;

(b) a temperature controller for maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition T_c of the superconductive composition; and

(c) a source of an electric current to flow in the superconductor element.

CLAIM 307 (Previously Presented) An apparatus for conducting an electric current essentially without resistive losses, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a transition metal-oxide

compound comprising a substantially layered perovskite crystal structure, the transition metal-oxide compound including at least one element selected from the group consisting of a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element, the composition comprising a superconductive/resistive transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$, the transition-onset temperature T_c being greater than or equal to 26°K;

(b) a temperature controller for maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$ of the superconductive composition; and

(c) a source of an electric current to flow in the superconductor element.

CLAIM 308 (Previously Presented) An apparatus according to claim 273 wherein said composition comprises a substantially layered perovskite crystal structure.

CLAIM 309 (Previously Presented) An apparatus according to claim 274 wherein said superconducting transistor metal oxide comprises a substantially layered perovskite crystal structure.

CLAIM 310 (Previously Presented) An apparatus according to claim 275 wherein said superconducting copper oxide comprises a substantially layered perovskite crystal structure.

CLAIM 311 (Previously Presented) An apparatus according to claim 276 wherein said superconducting oxide composition comprises a substantially layered perovskite crystal structure.

CLAIM 312 (Previously Presented) An apparatus according to claim 277 wherein said superconducting oxide composition comprises a substantially layered perovskite crystal structure.

CLAIM 313 (Previously Presented) An apparatus according to claim 278 wherein said transistor metal oxide comprises a substantially layered perovskite crystal structure.

CLAIM 314 (Previously Presented) An apparatus according to claim 279 wherein said copper oxide comprises a substantially layered perovskite crystal structure.

CLAIM 315 (Previously Presented) An apparatus according to claim 280 wherein said composition comprises a substantially layered perovskite crystal structure.

CLAIM 316 (Previously Presented) An apparatus according to claim 281 wherein said composition of matter comprises a substantially layered perovskite crystal structure.

CLAIM 317 (Previously Presented) An apparatus according to claim 282 wherein said composition of matter comprises substantially layered perovskite crystal structure.

CLAIM 318 (Previously Presented) An apparatus according to claim 283 wherein said composition of matter comprises a substantially layered perovskite crystal structure.

CLAIM 319 (Previously Presented) An apparatus according to claim 284 wherein said composition of matter comprises substantially layered perovskite crystal structure.

CLAIM 320 (Previously Presented) An apparatus according to claim 285 wherein said transistor metal oxide comprises substantially layered perovskite crystal structure.

CLAIM 321 (Previously Presented) An apparatus according to claim 286 wherein said copper oxide composition comprises substantially layered perovskite crystal structure.

CLAIM 322 (Previously Presented) A superconductive combination according to anyone of claims 84 or 85, wherein said mixed transition metal oxide can be made according to known principles of ceramic science.

CLAIM 323 (Previously Presented) An apparatus according to anyone of claims 86, 87, 144, 146, 147, 163, 164, 168, 169, 173, 174, 178, 182, 189, 196, 197, 214, 224, 235, 236, 237, 239, 254, 255, 259, 260, 264, 265 or 273, wherein said composition can be made according to known principles of ceramic science.

CLAIM 324 (Previously Presented) A combination according to anyone of claims 91, 92 or 36 to 39, wherein said composition can be made according to known principles of ceramic science.

CLAIM 325 (Previously Presented) A superconductive apparatus according to anyone of claims 1 to 11, 33 to 35, 66 to 68,109, 130, 361-366 or 370, wherein said composition can be made according to known principles of ceramic science.

CLAIM 326 (Previously Presented) An apparatus according to anyone of claims 93 to 95 or 138, wherein said mixed copper oxide can be made according to known principles of ceramic science.

CLAIM 327 (Previously Presented) A combination according to anyone of claims 64 or 135, wherein said mixed copper oxide can be made according to known principles of ceramic science.

CLAIM 328 (Previously Presented) A superconductive apparatus according to anyone of claims 48 to 52, 96 to 108, 198 to 204, 371, 383 or 384, wherein said superconductive composition can be made according to known principles of ceramic science.

CLAIM 329 (Previously Presented) A superconductive combination according to anyone of claims 12 to 23, 110, 131, 132 or 367-370, wherein said superconductive composition can be made according to known principles of ceramic science.

CLAIM 330 (Previously Presented) An apparatus according to anyone of claims 185 or 220, wherein said superconductive composition can be made according to known principles of ceramic science.

CLAIM 331 (Previously Presented) A device according to claim 111, wherein said superconductive transition metal oxide can be made according to known principles of ceramic science.

CLAIM 332 (Previously Presented) An apparatus according to anyone of claims 183, 217, 218, 274 or 309, wherein said superconductive transition metal oxide can be made according to known principles of ceramic science.

CLAIM 333 (Previously Presented) A device according to claim 112, wherein said superconductive copper oxide can be made according to known principles of ceramic science.

CLAIM 334 (Previously Presented) An apparatus according to anyone of claims 275, 276, 310 or 311, wherein said superconductive copper oxide can be made according to known principles of ceramic science.

CLAIM 335 (Previously Presented) A device according to claim 113, wherein said superconductive oxide composition can be made according to known principles of ceramic science.

CLAIM 336 (Previously Presented) An apparatus according to anyone of claims 186, 221, 272, 312 or 413, wherein said superconductive oxide composition can be made according to known principles of ceramic science.

CLAIM 337 (Previously Presented) A device according to anyone of claims 114 or 117, wherein said transition metal oxide can be made according to known principles of ceramic science.

CLAIM 338 (Previously Presented) An apparatus according to anyone of claims 24 to 26, 60 to 63, 116, 141 to 143, 172, 187, 222, 232 to 234, 263, 278, 285, 287, 288, 313 or 320, wherein said transition metal oxide can be made according to known principles of ceramic science.

CLAIM 339 (Previously Presented) A superconductive apparatus according to anyone of claims 27-32, 132 or 370, wherein said transition metal oxide can be made according to known principles of ceramic science.

CLAIM 340 (Previously Presented) An invention according to claim 118, wherein said transition metal oxide can be made according to known principles of ceramic science.

CLAIM 341 (Previously Presented) A transition metal oxide device according to claim 128, wherein said transition metal oxide can be made according to known principles of ceramic science.

CLAIM 342 (Previously Presented) An apparatus according to anyone of claims 40 to 45, wherein said superconductor can be made according to known principles of ceramic science.

CLAIM 343 (Previously Presented) A device according to anyone of claims 119 or 121, wherein said copper oxide can be made according to known principles of ceramic science.

CLAIM 344 (Previously Presented) An apparatus according to claim 120, wherein said copper oxide can be made according to known principles of ceramic science.

CLAIM 345 (Previously Presented) An invention according to claim 122, wherein said copper oxide can be made according to known principles of ceramic science.

CLAIM 346 (Previously Presented) A superconductive apparatus according to claim 123, wherein said copper oxide can be made according to known principles of ceramic science.

CLAIM 347 (Previously Presented) A copper oxide device according to claim 129, wherein said copper oxide can be made according to known principles of ceramic science.

CLAIM 348 (Previously Presented) An apparatus according to anyone of claims 162, 167, 177, 188, 223, 253, 258, 268, 269, 270, 279 or 314, wherein said copper oxide can be made according to known principles of ceramic science.

CLAIM 349 (Previously Presented) A combination according to claim 57, wherein said superconductive oxide can be made according to known principles of ceramic science.

CLAIM 350 (Previously Presented) A combination according to anyone of claims 58 or 373, wherein said copper oxide conductor can be made according to known principles of ceramic science.

CLAIM 351 (Previously Presented) A combination according to claim 59, wherein said ceramic-like material can be made according to known principles of ceramic science.

CLAIM 352 (Previously Presented) A superconductive combination according to anyone of claims 69 to 71 or 134, wherein said superconductive composition can be made according to known principles of ceramic science.

CLAIM 353 (Previously Presented) A superconductive apparatus according to anyone of claims 139, 140, 149 to 155, 156 to 161, 170, 171, 175, 176, 180, 181, 205 to 216, 387-393, or 396-401, wherein said superconductive composition can be made according to known principles of ceramic science.

CLAIM 354 (Previously Presented) An apparatus according to anyone of claims 165, 166, 185, 220, 240 to 246, 247 to 252, 261, 262, 289, 290 to 301, 394, 395, 402-406, 409 or 410, wherein said superconductive composition can be made according to known principles of ceramic science.

CLAIM 355 (Previously Presented) A combination according to anyone of claims 77 to 81, 186, 379 or 380, wherein said mixed copper oxide composition can be made according to known principles of ceramic science.

CLAIM 356 (Previously Presented) A device according to anyone of claims 124 to 127, wherein said composition of matter can be made according to known principles of ceramic science.

CLAIM 357 (Previously Presented) An apparatus according to anyone of claims 190 to 194, 225 to 229, 231, 256, 257, 266, 267, 271, 272, 281 to 284, 317 to 319, 407, or 411 to 413, wherein said composition of matter can be made according to known principles of ceramic science.

CLAIM 358 (Previously Presented) An apparatus according to anyone of claims 186 or 221, wherein said superconductive oxide composition can be made according to known principles of ceramic science.

CLAIM 359 (Previously Presented) An apparatus according to anyone of claims 195 or 230, wherein said copper oxide composition can be made according to known principles of ceramic science.

CLAIM 360 (Previously Presented) An apparatus according to anyone of claims 286 or 321, wherein said copper oxide composition can be made according to known principles of ceramic science.

CLAIM 361 (Previously Presented) A superconducting apparatus comprising a composition having a transition temperature greater than or equal to 26°K, the composition including a rare earth or an element comprising a rare earth characteristic, a transition metal element capable of exhibiting multivalent states and oxygen, including at least one phase that exhibits superconductivity at temperature greater than or equal to 26°K, a means for maintaining said composition at said temperature to exhibit said superconductivity and means for passing an electrical superconducting current through said composition while exhibiting said superconductivity.

CLAIM 362 (Previously Presented) The superconducting apparatus of claim 361, further including an alkaline earth element substituted for at least one atom of said rare earth or element comprising a rare earth characteristic in said composition.

CLAIM 363 (Previously Presented) The superconducting apparatus of claim 362, where said rare earth or element comprising a rare earth characteristic is selected from the group consisting of La, Nd, and Ce.

CLAIM 364 (Previously Presented) The superconducting apparatus of claim 361, where said phase is crystalline with a structure comprising a perovskite characteristic.

CLAIM 365 (Previously Presented) The superconducting apparatus of claim 362, where said phase is crystalline with a structure comprising a perovskite characteristic.

CLAIM 366 (Previously Presented) The superconducting apparatus of claim 361, where said phase exhibits a crystalline structure comprising a layered characteristic.

CLAIM 367 (Previously Presented) The combination of claim 15, where said additional element is a rare earth or an element comprising a rare earth characteristic.

CLAIM 368 (Previously Presented) The combination of claim 12, where said composition includes a superconducting phase comprising a perovskite characteristic.

CLAIM 369 (Previously Presented) The combination of claim 20, where said substituted transition metal oxide has a structure comprising a layered characteristic.

CLAIM 370 (Previously Presented) The superconducting apparatus of claim 31, where said crystalline structure comprises a layered characteristic, enhancing the number of Jahn-Teller polarons in said composite.

CLAIM 371 (Previously Presented) The superconductive apparatus of claim 48, where said substitutions include a rare earth or an element comprising a rare earth characteristic.

CLAIM 372 (Previously Presented) A superconductive apparatus comprised of a copper oxide comprising a crystalline structure comprising a layered characteristic and at least one additional element substituted in said crystalline structure, said structure being oxygen deficient and exhibiting a superconducting onset temperature greater than or equal to 26°K.

CLAIM 373 (Previously Presented) A combination, comprised of:

a copper oxide superconductor having a superconductor onset temperature greater than about 26°K including an element which results in a mixed valent state in said oxide, said oxide being crystalline and comprising a structure comprising a layered characteristic,

means for passing a superconducting current through said copper oxide while it is maintained at a temperature greater than or equal to 26°K and less than said superconducting onset temperature, and

means for cooling said copper oxide to a superconductive state at a temperature greater than or equal to 26°K and less than said superconducting onset temperature.

CLAIM 374 (Previously Presented) A combination, comprised of:

a material comprising a ceramic characteristic comprising an onset of superconductivity at an onset temperature greater than or equal to 26°K,

means for passing a superconducting electrical current through said material comprising a ceramic characteristic while said material is maintained at a temperature greater than or equal to 26°K and less than said onset temperature, and

means for cooling said superconducting material having a ceramic characteristic to a superconductive state at a temperature greater than or equal to 26°K and less than said onset temperature, said material being superconductive at temperatures below said onset temperature and a ceramic at temperatures above said onset temperature.

CLAIM 375 (Previously Presented) An apparatus comprising a composition exhibiting superconductivity at temperatures greater than or equal to 26°K, said composition being a material comprising a ceramic characteristic in the RE-AE-TM-O system, where RE is a rare earth or near rare earth element, AE is an alkaline earth element, TM is a multivalent transition metal element having at least two valence states in said composition, and O is oxygen, the ratio of the amounts of said transition metal in said two valence states being determined by the ratio RE : AE, a source of current for passing a superconducting electric current in said transition metal oxide, and a cooling apparatus for maintaining said transition metal oxide below said onset temperature and at a temperature greater than or equal to 26°K.

CLAIM 376 (Previously Presented) The combination of claim 71, where said mixed copper oxide further includes a rare earth or an element comprising a rare earth characteristic.

CLAIM 377 (Previously Presented) An apparatus comprising a superconductor having a superconducting onset temperature greater than or equal to 26°K, said superconductor being made by a method including the steps of:

preparing powders of oxygen-containing compounds of a rare earth or rare earth-like element, an alkaline earth element, and copper,

mixing said compounds and firing said mixture to create a mixed copper oxide composition including said alkaline earth element and said rare earth or rare earth-like element, and

annealing said mixed copper oxide composition at an elevated temperature less than about 950°C in an atmosphere including oxygen to produce a superconducting composition having a mixed copper oxide phase exhibiting a superconducting onset temperature greater than or equal to 26°K, said superconducting composition comprising a crystalline structure comprising a layered characteristic after said annealing step.

CLAIM 378 (Previously Presented) An apparatus comprising a superconductor having a superconducting onset temperature greater than or equal to 26°K, said superconductor being comprised of a rare earth or an element (RE) comprising a rare earth characteristic, an alkaline earth element (AE), copper (CU), and oxygen (O) and having the general formula RE-AE-CU-O, said superconductor being made by a method comprising the steps of combining said rare earth or element comprising a rare earth characteristic, said alkaline earth element and said copper in the presence of oxygen to

produce a mixed copper oxide including said rare earth or rare earth-like element and said alkaline earth element therein, and

heating said mixed copper oxide to produce a superconductor having a crystalline structure comprising a layered characteristic and exhibiting a superconducting onset temperature greater than or equal to 26°K the critical transition temperature of said superconductor being dependent on the amount of said alkaline earth element therein.

CLAIM 379 (Previously Presented) A combination, comprising:

a mixed copper oxide composition including an alkaline earth element (AE) and a rare earth or element (RE) comprising a rare earth characteristic, said composition comprising a crystalline structure comprising a layered characteristic and multi-valent oxidation states, said composition exhibiting *a* substantially zero resistance to the flow of electrical current therethrough when cooled to a superconducting state at a temperature greater than or equal to 26°K, said mixed copper oxide having a superconducting onset temperature greater than or equal to 26°K, and

electrical means for passing an electrical superconducting current through said composition when said composition exhibits substantially zero resistance at a temperature greater than or equal to 26°K and less than said onset temperature.

CLAIM 380 (Previously Presented) The combination of claim 379, wherein said crystalline structure comprises a perovskite characteristic.

CLAIM 381 (Previously Presented) An apparatus comprising a superconductor having a superconducting onset temperature greater than or equal to 26°K, said superconductor being comprised of a rare earth or an element (RE) comprising a rare earth characteristic, an alkaline earth element (AE), a transition metal element (TM), and Oxygen (O) and having the general formula RE-AE-TM-O, said superconductor being made by a method comprising the steps of combining said rare earth or element

comprising a rare earth characteristic, said alkaline earth element and said transition metal element in the presence of oxygen to produce a mixed transition metal oxide including said rare earth or element comprising a rare earth characteristic and said alkaline earth element therein, and

heating said mixed transition metal oxide to produce superconductor having a crystalline structure comprising a layered characteristic and exhibiting a superconducting onset temperature greater than or equal to 26°K, said superconductor having a non-stoichiometric amount of oxygen therein.

CLAIM 382 (Previously Presented) The apparatus of claim 93, where said copper oxide material exhibits a crystalline structure comprising a layered characteristic.

CLAIM 383 (Previously Presented) A superconductive apparatus for causing electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition comprising a copper-oxide compound having a crystal structure comprising a perovskite characteristic and a layered characteristic, the composition having a superconductor transition temperature T_c of greater than or equal to 26°K;

(b) means for maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and

(c) means for causing an electric current to flow in the superconductor element.

CLAIM 384 (Previously Presented) The superconductive apparatus according to claim 383 in which the copper-oxide compound of the superconductive composition includes

at least one rare-earth or element comprising a rare earth characteristic and at least one alkaline-earth element.

CLAIM 385 (Previously Presented) The superconductive apparatus according to claim 384 in which the rare-earth or element comprising a rare earth characteristic is lanthanum.

CLAIM 386 (Previously Presented) A superconductive apparatus for conducting an electric current essentially without resistive losses, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite characteristic, the copper-oxide compound including at least one rare-earth or element comprising a rare earth characteristic and at least one alkaline-earth element, the composition having a superconductive/resistive transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_{q=o}$, the transition-onset temperature T_c being greater than or equal to 26°K;

(b) means for maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_{q=o}$ of the superconductive composition; and

(c) means for causing an electric current to flow in the superconductor element.

CLAIM 387 (Previously Presented) The superconductive apparatus according to claim 386 in which the rare-earth or an element comprising a rare earth characteristic is lanthanum.

CLAIM 388 (Previously Presented) An apparatus comprising:

a composition including a transition metal, a rare earth or an element comprising a rare earth characteristic, an alkaline earth element, and oxygen, where said composition is a mixed transition metal oxide having a non-stoichiometric amount of oxygen therein and exhibiting a superconducting state at a temperature greater than or equal to 26°K,

a temperature controller maintaining said composition in said superconducting state at a temperature greater than or equal to 26°K, and

a current source passing an electrical current through said composition while said composition is in said superconducting state.

CLAIM 389 (Previously Presented) A superconductive apparatus for causing electric current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite characteristic, the composition having a superconductor transition temperature T_c of greater than or equal to 26°K;

(b) a temperature controller maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and

(c) causing an electric current to flow in the superconductor element.

CLAIM 390 (Previously Presented) The superconductive apparatus according to claim 389 in which the copper-oxide compound of the superconductive composition includes

at least one rare-earth or an element comprising a rare earth characteristic and at least one alkaline-earth element.

CLAIM 391 (Previously Presented) The superconductive apparatus according to claim 390 in which the rare-earth or an element comprising a rare earth characteristic is lanthanum.

CLAIM 392 (Previously Presented) A superconductive apparatus for conducting an electric current essentially without resistive losses, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite characteristic, the copper-oxide compound including at least one rare-earth or rare-earth-like element and at least one alkaline-earth element, the composition having a superconductive/resistive-transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_{\rho=0}$, the transition-onset temperature T_c being greater than or equal to 26°K;

(b) a temperature controller maintaining the superconductor element at a temperature below the effectively-zero-bulk- resistivity intercept temperature $T_{\rho=0}$ of the superconductive composition; and

(c) a current source causing an electric current to flow in the superconductor element.

CLAIM 393 (Previously Presented) The superconductive apparatus according to claim 392 in which the rare-earth or an element comprising a rare earth characteristic is lanthanum.

CLAIM 394 (Previously Presented) An apparatus for causing electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite characteristic, the composition having a superconductive transition temperature T_c of greater than or equal to 26°K, said superconductive composition includes at least one element selected from the group consisting of a Group II A element, a rare earth element; and a Group III B element;

(b) a temperature controller maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and

(c) a current source causing an electric current to flow in the superconductor element.

CLAIM 395 (Previously Presented) An apparatus for conducting an electric current essentially without resistive losses, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite characteristic, the copper-oxide compound including at least one element selected from the group consisting of a Group II A element, a rare earth element and a Group III B element, the composition having a superconductive/resistive transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_{\rho=0}$, the transition-onset temperature T_c being greater than or equal to 26°K;

(b) a temperature controller maintaining the superconductor element at a temperature below the effectively-zero-bulk- resistivity intercept temperature $T_{p=o}$ of the superconductive composition; and

(c) a current source causing an electric current to flow in the superconductor element.

CLAIM 396 (Previously Presented) A superconductive apparatus for causing electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite characteristic, the composition having a superconductive transition temperature T_c of greater than or equal to 26°K, said superconductive composition includes at least one element selected from the group consisting of a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element;

(b) a temperature controller maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and

(c) a current source causing an electric current to flow in the superconductor element.

CLAIM 397 (Previously Presented) A superconductive apparatus for conducting an electric current essentially without resistive losses, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite

characteristic, the copper-oxide compound including at least one element selected from the group consisting of a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element, the composition having a superconductive/resistive transition defining a superconductive-resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$, the transition-onset temperature T_c being greater than or equal to 26°K;

(b) a temperature controller maintaining the superconductor element at a temperature below the effectively-zero-bulk- resistivity intercept temperature $T_{p=0}$ of the superconductive composition; and

(c) a current source causing an electric current to flow in the superconductor element.

CLAIM 398 (Previously Presented) A superconductive apparatus for causing electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a transition metal oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite characteristic, the composition having a superconductive transition temperature T_c of greater than or equal to 26°K, said superconductive composition includes an element selected from the group consisting of a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element;

(b) a temperature controller maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition T_c of the superconductive composition; and

(c) a current source causing an electric current to flow in the superconductor element.

CLAIM 399 (Previously Presented) A superconductive apparatus for conducting an electric current essentially without resistive losses, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a transition metal-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite characteristic, the transition metal-oxide compound including at least one element selected from the group consisting of a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element, the composition having a superconductive/resistive transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$, the transition-onset temperature T_c being greater than or equal to 26°K;

(b) a temperature controller maintaining the superconductor element at a temperature below the effectively-zero-bulk- resistivity intercept temperature $T_{p=0}$ of the superconductive composition; and

(c) a current source causing an electric current to flow in the superconductor element.

CLAIM 400 (Previously Presented) A superconductive apparatus for causing electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite

characteristic, the composition having a superconductive transition temperature T_c of greater than or equal to 26°K, said superconductive composition includes a Group II A element, and at least one element selected from the group consisting of a rare earth element and a Group III B element;

(b) a temperature controller maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and

(c) a current source causing an electric current to flow in the superconductor element.

CLAIM 401 (Previously Presented) A superconductive apparatus for conducting an electric current essentially without resistive losses, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite characteristic, the copper-oxide compound including Group II A element, and at least one element selected from the group consisting of a rare earth element and a Group III B element, the composition having a superconductive-resistive transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$, the transition-onset temperature T_c being greater than or equal to 26°K;

(b) a temperature controller maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$ of the superconductive composition; and

(c) a current source causing an electric current to flow in the superconductor element.

CLAIM 402 (Previously Presented) An apparatus capable of carrying electric current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite characteristic, the composition comprising a superconductor transition temperature T_c of greater than or equal to 26°K;

(b) a temperature controller for maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and

(c) a source of an electric current to flow in the superconductor element.

CLAIM 403 (Previously Presented) An apparatus according to claim 402 in which the copper-oxide compound of the superconductive composition includes at least one rare-earth or an element comprising a rare earth characteristic and at least one alkaline-earth element.

CLAIM 404 (Previously Presented) An apparatus according to claim 403 in which the rare-earth or element comprising a rare earth characteristic is lanthanum.

CLAIM 405 (Previously Presented) An apparatus for conducting an electric current essentially without resistive losses, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a layer-type perovskite-like crystal structure, the copper-oxide compound comprising at least one rare-earth or element comprising a rare earth characteristic and

at least one alkaline-earth element, the composition comprising a superconductive/resistive transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$, the transition-onset temperature T_c being greater than or equal to 26°K;

(b) a temperature controller for maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$ of the superconductive composition; and

(c) a source of an electric current to flow in the superconductor element.

CLAIM 406 (Previously Presented) An apparatus according to claim 405 in which the rare-earth or element comprising a rare earth characteristic is lanthanum.

CLAIM 407 (Previously Presented) An apparatus capable of carrying an electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite characteristic, the composition comprising a superconductive transition temperature T_c of greater than or equal to 26°K, said superconductive composition includes at least one element selected from the group consisting of a Group II A element, a rare earth element; and a Group III B element;

(b) a temperature controller for maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and

(c) a source of an electric current to flow in the superconductor element.

CLAIM 408 (Previously Presented) An apparatus capable of carrying an electric current essentially without resistive losses, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite characteristic, the copper-oxide compound including at least one element selected from the group consisting of a Group II A element, a rare earth element and a Group III B element, the composition comprising a superconductive/resistive transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$, the transition-onset temperature T_c being greater than or equal to 26°K;

(b) a temperature controller for maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$ of the superconductive composition; and

(c) a source of an electric current to flow in the superconductor element.

CLAIM 409 (Previously Presented) An apparatus capable of carrying an electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite characteristic, the composition comprising a superconductive transition temperature T_c of greater than or equal to 26°K, said superconductive composition includes at least one

element selected from the group consisting of a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element;

(b) a temperature controller for maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and

(c) a source of an electric current to flow in the superconductor element.

CLAIM 410 (Previously Presented) An apparatus for conducting an electric current essentially without resistive losses, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite characteristic, the copper-oxide compound including at least one element selected from the group consisting of a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element, the composition comprising a superconductive/resistive transition defining a superconductive-resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$, the transition-onset temperature T_c being greater than or equal to 26°K;

(b) a temperature controller for maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$ of the superconductive composition; and

(c) a source of an electric current to flow in the superconductor element.

CLAIM 411 (Previously Presented) An apparatus capable of carrying an electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a transition metal oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite characteristic, the composition comprising a superconductive transition temperature T_c of greater than or equal to 26°K, said superconductive composition includes at least one element selected from the group consisting of a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element;

(b) a temperature controller for maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition T_c of the superconductive composition; and

(c) a source of an electric current to flow in the superconductor element.

CLAIM 412 (Previously Presented) An apparatus for conducting an electric current essentially without resistive losses, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a transition metal-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite characteristic, the transition metal-oxide compound including at least one element selected from the group consisting of a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element, the composition comprising a superconductive/resistive transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-

bulk-resistivity intercept temperature $T_{p=0}$, the transition-onset temperature T_c being greater than or equal to 26°K;

(b) a temperature controller for maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$ of the superconductive composition; and

(c) a source of an electric current to flow in the superconductor element.

CLAIM 413 (Previously Presented) An apparatus for conducting an electric current essentially without resistive losses, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite characteristic, the copper-oxide compound including at least one element selected from the group consisting of a group II A element, at least one element selected from the group consisting of a rare earth element and at least one element selected from the group consisting of a Group III B element, the composition comprising a superconductive-resistive transition temperature defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$, the transition-onset temperature T_c being greater than or equal to 26°K;

(b) a temperature controller for maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$ of the superconductive composition; and

(c) a source of an electric current to flow in the superconductor element.

CLAIM 414 (Previously Presented) A superconducting apparatus according to anyone of claims 361-365 or 366, wherein said composition can be made according to known principles of ceramic science.

CLAIM 415 (Previously Presented) A superconducting combination according to anyone of claims 367, 368 or 369, wherein said composition can be made according to known principles of ceramic science.

CLAIM 416 (Previously Presented) A superconducting apparatus according to anyone of claims 370 or 371, wherein said composition can be made according to known principles of ceramic science.

CLAIM 417 (Previously Presented) A superconducting apparatus according to claim 372, wherein said copper oxide can be made according to known principles of ceramic science.

CLAIM 418 (Previously Presented) A combination according to claim 373, wherein said copper oxide can be made according to known principles of ceramic science.

CLAIM 419 (Previously Presented) A combination according to claim 374, wherein said material can be made by known principles of ceramic science.

CLAIM 420 (Previously Presented) A apparatus according to claim 375, wherein said composition can be made by known principles of ceramic science.

CLAIM 421 (Previously Presented) A combination according to claim 376, wherein said mixed copper oxide can be made by known principles of ceramic science.

CLAIM 422 (Previously Presented) A combination according to anyone of claims 379 or 380, wherein said mixed copper oxide can be made by known principles of ceramic science.

CLAIM 423 (Previously Presented) A apparatus according to claim 382, wherein said copper oxide material can be made by known principles of ceramic science.

CLAIM 424 (Previously Presented) A superconductive apparatus according to anyone of claims 383, 384, 385, 386, 387 and 389, wherein said composition can be made by known principles of ceramic science.

CLAIM 425 (Previously Presented) A apparatus according to claim 388, wherein said composition can be made according to known principles of ceramic science.

CLAIM 426 (Previously Presented) A superconductive apparatus according to anyone of claims 389 to 400 or 401, wherein said superconductive composition can be made by known principles of ceramic science.

CLAIM 427 (Previously Presented) A apparatus according to anyone of claims 402 to 412 or 413, wherein said superconductive composition can be made by known principles of ceramic science.

CLAIM 428 (Previously Presented) An apparatus capable of carrying electric current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

a superconductive element comprising a superconductive composition, said superconductive composition comprising O and at least one element selected from the group consisting of Be, Mg, Ca, Sr, Ba, Ra, Sc, Y, La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, and Lu; and

said composition comprising a superconductor transition temperature T_c of greater than or equal to 26°K.

CLAIM 429 (Previously Presented) An apparatus according to claim 428, further including:

a temperature controller for maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and

a source of an electric current to flow in the superconductor element.

CLAIM 430 (Previously Presented) An apparatus according to claim 428, wherein said composition comprises a substantially layered structure.

CLAIM 431 (Previously Presented) An apparatus according to claim 429, wherein said composition comprises a substantially layered structure.

CLAIM 432 (Previously Presented) An apparatus according to anyone of claims 428 to 430 or 431, wherein said composition comprises a substantially perovskite crystal structure.

CLAIM 433 (Previously Presented) An apparatus according to any one of claims 428 to 430 or 431, wherein said composition comprises a perovskite-like structure.

CLAIM 434 (Previously Presented) An apparatus according to any one of claims 428 to 430 or 431, wherein said composition comprises a perovskite characteristic.

CLAIM 435 (Previously Presented) An apparatus according to any one of claims 428 to 430 or 431, wherein said composition comprises a perovskite related structure.

CLAIM 436 (Previously Presented) An apparatus according to anyone of claims 428 to 431 or 432, wherein said composition can be made according to known principals of ceramic science.

CLAIM 437 (Previously Presented) An apparatus according to claim 88 wherein said composition is an oxide.

CLAIM 438 (Currently Amended) An apparatus comprising: a means for conducting a superconducting current ~~comprising a T_c~~ at a temperature greater than or equal to 26°K and a means for providing an electric current to flow in said means for conducting a superconducting current.

CLAIM 439 (Currently Amended) An apparatus according to claim 438, wherein said means for conducting a superconductive current ~~is at a temperature~~ comprises a T_c greater than or equal to 26°K.

CLAIM 440 (Currently Amended) An apparatus according to claim 438, further including a temperature controller for maintaining said means for conducting a superconducting current at a said temperature ~~less than said T_c~~.

CLAIM 441 (Previously Presented) An apparatus according to anyone of claims 438, 439 or 440, wherein said means for conducting a superconducting current comprises oxygen.

CLAIM 442 (Previously Presented) An apparatus according to anyone of claims 438, 439 and 440, wherein said means for conducting a superconducting current comprises one or more of the groups consisting of Be, Mg, Ca, Sr, Ba, Ra, Sc, Y, La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu.

CLAIM 443 (Previously Presented) An apparatus according to anyone of claims 438, 439 or 440, wherein said means for conducting a superconducting current comprises one or more of Be, Mg, Ca, Sr, Ba and Ra and one or more of Sc, Y, La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu.

CLAIM 444 (Previously Presented) An apparatus according to anyone of claims 438, 439 and 440, wherein said means for conducting a superconducting current comprises a layered structure.

CLAIM 445 (Previously Presented) An apparatus according to anyone of claims 438, 439 and 440, wherein said means for conducting a superconducting current comprises a substantially perovskite structure.

CLAIM 446 (Previously Presented) An apparatus according to anyone of claims 438, 439 and 440, wherein said means for conducting a superconducting current comprises a perovskite-like structure.

CLAIM 447 (Previously Presented) An apparatus according to anyone of claims 438, 439 and 440, wherein said means for conducting a superconducting current comprises a perovskite related structure.

CLAIM 448 (Previously Presented) An apparatus according to anyone of claims 438, 439 and 440, wherein said means for conducting a superconducting current comprises a structure having a perovskite characteristic.

CLAIM 449 (Previously Presented) An apparatus according to anyone of claims 438, 439 and 440, wherein said means for conducting a superconducting current comprises a transition metal.

CLAIM 450 (Previously Presented) An apparatus according to anyone of claims 438, 439 and 440, wherein said means for conducting a superconducting current comprises a copper oxide.

CLAIM 451 (Previously Presented) An apparatus according to anyone of claims 438, 439 and 440, wherein said means for conducting a superconducting current comprises oxygen in a nonstoichiomeric amount.

CLAIM 452 (Previously Presented) An apparatus according to anyone of claims 438, 439 and 440, wherein said means for conducting a superconducting current comprises a multivalent transition metal.

CLAIM 453 (Previously Presented) An apparatus according to anyone of claims 438, 439 or 440, wherein said means for conducting a superconducting current can be made according to known principles of ceramic science.

CLAIM 454 (Previously Presented) An apparatus according to claim 441, wherein said means for conducting a superconducting current can be made according to known principles of ceramic science.

CLAIM 455 (Previously Presented) An apparatus according to claim 442, wherein said means for conducting a superconducting current can be made according to known principles of ceramic science.

CLAIM 456 (Previously Presented) An apparatus according to claim 443, wherein said means for conducting a superconducting current can be made according to known principles of ceramic science.

CLAIM 457 (Previously Presented) An apparatus according to claim 444, wherein said means for conducting a superconducting current can be made according to known principles of ceramic science.

CLAIM 458 (Previously Presented) An apparatus according to claim 445, wherein said means for conducting a superconducting current can be made according to known principles of ceramic science.

CLAIM 459 (Previously Presented) An apparatus according to claim 446, wherein said means for conducting a superconducting current can be made according to known principles of ceramic science.

CLAIM 460 (Previously Presented) An apparatus according to claim 447, wherein said means for conducting a superconducting current can be made according to known principles of ceramic science.

CLAIM 461 (Previously Presented) An apparatus according to claim 448, wherein said means for conducting a superconducting current can be made according to known principles of ceramic science.

CLAIM 462 (Previously Presented) An apparatus according to claim 449, wherein said means for conducting a superconducting current can be made according to known principles of ceramic science.

CLAIM 463 (Previously Presented) An apparatus according to claim 450, wherein said means for conducting a superconducting current can be made according to known principles of ceramic science.

CLAIM 464 (Previously Presented) An apparatus according to claim 451, wherein said means for conducting a superconducting current can be made according to known principles of ceramic science.

CLAIM 465 (Previously Presented) An apparatus according to claim 452, wherein said means for conducting a superconducting current can be made according to known principles of ceramic science.

CLAIM 466 (Previously Presented) An apparatus comprising:

a superconductive current carrying element comprising a $T_c \geq 26^{\circ}K$;

said superconductive current carrying element comprises a property selected from one or more of the group consisting of a mixed valent oxide, a transition metal, a mixed valent transition metal, a perovskite structure, a perovskite-like structure, a perovskite related structure, a layered structure, a stoichiomeric or nonstoichiomeric oxygen contents and a dopant.

CLAIM 467 (Previously Presented) An apparatus according to claim 466, wherein said superconductive current carrying element is at a temperature greater than or equal to 26°K.

CLAIM 468 (Previously Presented) An apparatus according to claim 466, further including a temperature controller for maintaining said superconductive current carrying element at a temperature less than said T_c.

CLAIM 469 (Previously Presented) An apparatus according to anyone of claims 466, 467 or 468, wherein said superconductive current carrying element comprises one or more of the group consisting of Be, Mg, Ca, Sr, Ba, Ra, Sc, Y, La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu.

CLAIM 470 (Previously Presented) An apparatus according to anyone of claims 466, 467 or 468, wherein said superconductive current carrying element comprises one or more of Be, Mg, Ca, Sr, Ba and Ra and one or more of Sc, Y, La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu.

CLAIM 471 (Previously Presented) An apparatus according to claim 469, wherein said superconductive current carrying element comprises a transition metal.

CLAIM 472 (Previously Presented) An apparatus according to claim 470, wherein said superconductive current carrying element comprises a transition metal

CLAIM 473 (Previously Presented) An apparatus according to anyone of claims 466, 467, or 468, wherein said superconducting current carrying element can be made according to known principles of ceramic science.

CLAIM 474 (Previously Presented) An apparatus according to of claim 471, wherein said superconducting current carrying element can be made according to known principles of ceramic science.

CLAIM 475 (Previously Presented) An apparatus according to of claim 472, wherein said superconducting current carrying element can be made according to known principles of ceramic science.

CLAIM 476 (Previously Presented) An apparatus comprising:

a superconductive current carrying element comprising a $T_c \geq 26^{\circ}K$;

said superconductive current carrying element comprises an oxide, a layered perovskite structure or a layered perovskite-like structure and comprises a stoichiomeric or nonstoichiomeric oxygen content.

CLAIM 477 (Previously Presented) An apparatus according to claim 476, wherein said superconductive current carrying element is at a temperature greater than or equal to $26^{\circ}K$.

CLAIM 478 (Previously Presented) An apparatus according to claim 476, further including a temperature controller for maintaining said superconductive current carrying element at a temperature less than said T_c.

CLAIM 479 (Previously Presented) An apparatus according to anyone of claims 476, 477 or 478, wherein said superconductive current carrying element comprises one or

more of the group consisting of Be, Mg, Ca, Sr, Ba, Ra, Sc, Y, La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu.

CLAIM 480 (Previously Presented) An apparatus according to anyone of claims 476, 477 or 478, wherein said superconductive current carrying element comprises one or more of Be, Mg, Ca, Sr, Ba and Ra and one or more of Sc, Y, La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu.

CLAIM 481 (Previously Presented) An apparatus according to claim 479, wherein said superconductive current carrying element comprises a transition metal.

CLAIM 482 (Previously Presented) An apparatus according to claim 480, wherein said superconductive current carrying element comprises a transition metal.

CLAIM 483 (Previously Presented) An apparatus according to claim 476, wherein said superconductive current carrying element comprises copper oxide.

CLAIM 484 (Previously Presented) An apparatus according to anyone of claims 476, 477 or 478, wherein said superconductive current carrying element can be made according to known principles of ceramic science.

CLAIM 485 (Previously Presented) An apparatus according to claim 479, wherein said superconductive current carrying element can be made according to known principles of ceramic science.

CLAIM 486 (Previously Presented) An apparatus according to claim 480, wherein said superconductive current carrying element can be made according to known principles of ceramic science.

CLAIM 487 (Previously Presented) An apparatus according to claim 481, wherein said superconductive current carrying element can be made according to known principles of ceramic science.

CLAIM 488 (Previously Presented) An apparatus according to claim 482, wherein said superconductive current carrying element can be made according to known principles of ceramic science.

CLAIM 489 (Previously Presented) An apparatus according to claim 483, wherein said superconductive current carrying element can be made according to known principles of ceramic science.

CLAIM 490 (Previously Presented) An apparatus according to claim 484, wherein said superconductive current carrying element can be made according to known principles of ceramic science.

CLAIM 491 (Previously Presented) An apparatus according to claim 485, wherein said superconductive current carrying element can be made according to known principles of ceramic science.

CLAIM 492 (Previously Presented) The superconducting apparatus of claim 361, where said phase is crystalline with a structure comprising a perovskite related structure.

CLAIM 493 (Previously Presented) The superconducting apparatus of claim 362, where said phase is crystalline with a structure comprising a perovskite related structure.

CLAIM 494 (Previously Presented) The combination of claim 12, where said composition includes a superconducting phase comprising a perovskite related structure.

CLAIM 495 (Previously Presented) The combination of claim 379, wherein said crystalline structure comprises a perovskite related structure.

CLAIM 496 (Previously Presented) A superconductive apparatus for causing electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition comprising a copper-oxide compound having a crystal structure comprising a perovskite related structure and a layered characteristic, the composition having a superconductor transition temperature T_c of greater than or equal to 26°K;

(b) means for maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and

(c) means for causing an electric current to flow in the superconductor element.

CLAIM 497 (Previously Presented) A superconductive apparatus for conducting an electric current essentially without resistive losses, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite related structure, the copper-oxide compound including at least one rare-earth or element comprising a rare earth characteristic and at least one alkaline-earth element, the composition having a superconductive/resistive transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-

bulk-resistivity intercept temperature $T_{q=o}$, the transition-onset temperature T_c being greater than or equal to 26°K;

(b) means for maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_{q=o}$ of the superconductive composition; and

(c) means for causing an electric current to flow in the superconductor element.

CLAIM 498 (Previously Presented) A superconductive apparatus for causing electric current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite related structure, the composition having a superconductor transition temperature T_c of greater than or equal to 26°K;

(b) a temperature controller maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and

(c) causing an electric current to flow in the superconductor element.

CLAIM 499 (Previously Presented) A superconductive apparatus for conducting an electric current essentially without resistive losses, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite

related structure, the copper-oxide compound including at least one rare-earth or rare-earth-like element and at least one alkaline-earth element, the composition having a superconductive/resistive-transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$, the transition-onset temperature T_c being greater than or equal to 26°K;

(b) a temperature controller maintaining the superconductor element at a temperature below the effectively-zero-bulk- resistivity intercept temperature $T_{p=0}$ of the superconductive composition; and

(c) a current source causing an electric current to flow in the superconductor element.

CLAIM 500 (Previously Presented) An apparatus for causing electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite related structure, the composition having a superconductive transition temperature T_c of greater than or equal to 26°K, said superconductive composition includes at least one element selected from the group consisting of a Group II A element, a rare earth element; and a Group III B element;

(b) a temperature controller maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and

(c) a current source causing an electric current to flow in the superconductor element.

CLAIM 501 (Previously Presented) An apparatus for conducting an electric current essentially without resistive losses, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite related structure, the copper-oxide compound including at least one element selected from the group consisting of a Group II A element, a rare earth element and a Group III B element, the composition having a superconductive/resistive transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$, the transition-onset temperature T_c being greater than or equal to 26°K;

(b) a temperature controller maintaining the superconductor element at a temperature below the effectively-zero-bulk- resistivity intercept temperature $T_{p=o}$ of the superconductive composition; and

(c) a current source causing an electric current to flow in the superconductor element.

CLAIM 502 (Previously Presented) A superconductive apparatus for causing electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite related structure, the composition having a superconductive transition temperature T_c of greater than or equal to 26°K, said superconductive composition includes at least one element selected from the group consisting of a Group II A element and at least one

element selected from the group consisting of a rare earth element and a Group III B element;

(b) a temperature controller maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and

(c) a current source causing an electric current to flow in the superconductor element.

CLAIM 503 (Previously Presented) A superconductive apparatus for conducting an electric current essentially without resistive losses, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite related structure, the copper-oxide compound including at least one element selected from the group consisting of a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element, the composition having a superconductive/resistive transition defining a superconductive-resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_{\rho=0}$, the transition-onset temperature T_c being greater than or equal to 26°K;

(b) a temperature controller maintaining the superconductor element at a temperature below the effectively-zero-bulk- resistivity intercept temperature $T_{\rho=0}$ of the superconductive composition; and

(c) a current source causing an electric current to flow in the superconductor element.

CLAIM 504 (Previously Presented) A superconductive apparatus for causing electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a transition metal oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite related structure, the composition having a superconductive transition temperature T_c of greater than or equal to 26°K, said superconductive composition includes an element selected from the group consisting of a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element;

(b) a temperature controller maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition T_c of the superconductive composition; and

(c) a current source causing an electric current to flow in the superconductor element.

CLAIM 505 (Previously Presented) A superconductive apparatus for conducting an electric current essentially without resistive losses, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a transition metal-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite related structure, the transition metal-oxide compound including at least one element selected from the group consisting of a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element, the composition having a superconductive/resistive transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-

bulk-resistivity intercept temperature $T_{p=0}$, the transition-onset temperature T_c being greater than or equal to 26°K;

(b) a temperature controller maintaining the superconductor element at a temperature below the effectively-zero-bulk- resistivity intercept temperature $T_{p=0}$ of the superconductive composition; and

(c) a current source causing an electric current to flow in the superconductor element.

CLAIM 506 (Previously Presented) A superconductive apparatus for causing electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite related structure, the composition having a superconductive transition temperature T_c of greater than or equal to 26°K, said superconductive composition includes a Group II A element, and at least one element selected from the group consisting of a rare earth element and a Group III B element;

(b) a temperature controller maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and

(c) a current source causing an electric current to flow in the superconductor element.

CLAIM 507 (Previously Presented) A superconductive apparatus for conducting an electric current essentially without resistive losses, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound

comprising a crystal structure comprising a layered characteristic and a perovskite related structure, the copper-oxide compound including Group II A element, and at least one element selected from the group consisting of a rare earth element and a Group III B element, the composition having a superconductive-resistive transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$, the transition-onset temperature T_c being greater than or equal to 26°K;

(b) a temperature controller maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$ of the superconductive composition; and

(c) a current source causing an electric current to flow in the superconductor element.

CLAIM 508 (Previously Presented) An apparatus capable of carrying electric current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite related structure, the composition comprising a superconductor transition temperature T_c of greater than or equal to 26°K;

(b) a temperature controller for maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and

(c) a source of an electric current to flow in the superconductor element.

CLAIM 509 (Previously Presented) An apparatus capable of carrying an electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite related structure, the composition comprising a superconductive transition temperature T_c of greater than or equal to 26°K, said superconductive composition includes at least one element selected from the group consisting of a Group II A element, a rare earth element; and a Group III B element;

(b) a temperature controller for maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and

(c) a source of an electric current to flow in the superconductor element.

CLAIM 510 (Previously Presented) An apparatus capable of carrying an electric current essentially without resistive losses, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite related structure, the copper-oxide compound including at least one element selected from the group consisting of a Group II A element, a rare earth element and a Group III B element, the composition comprising a superconductive/resistive transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$, the transition-onset temperature T_c being greater than or equal to 26°K;

(b) a temperature controller for maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$ of the superconductive composition; and

CLAIM 511 (Previously Presented) An apparatus capable of carrying an electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite related structure, the composition comprising a superconductive transition temperature T_c of greater than or equal to 26°K, said superconductive composition includes at least one element selected from the group consisting of a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element;

(b) a temperature controller for maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition temperature T_c of the superconductive composition; and

(c) a source of an electric current to flow in the superconductor element.

CLAIM 512 (Previously Presented) An apparatus for conducting an electric current essentially without resistive losses, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite related structure, the copper-oxide compound including at least one element selected from the group consisting of a Group II A element and at least one element selected

from the group consisting of a rare earth element and a Group III B element, the composition comprising a superconductive/resistive transition defining a superconductive-resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$, the transition-onset temperature T_c being greater than or equal to 26°K;

(b) a temperature controller for maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$ of the superconductive composition; and

(c) a source of an electric current to flow in the superconductor element.

CLAIM 513 (Previously Presented) An apparatus capable of carrying an electric-current flow in a superconductive state at a temperature greater than or equal to 26°K, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a transition metal oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite related structure, the composition comprising a superconductive transition temperature T_c of greater than or equal to 26°K, said superconductive composition includes at least one element selected from the group consisting of a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element;

(b) a temperature controller for maintaining the superconductor element at a temperature greater than or equal to 26°K and below the superconductor transition T_c of the superconductive composition; and

(c) a source of an electric current to flow in the superconductor element.

CLAIM 514 (Previously Presented) An apparatus for conducting an electric current essentially without resistive losses, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a transition metal-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite related structure, the transition metal-oxide compound including at least one element selected from the group consisting of a Group II A element and at least one element selected from the group consisting of a rare earth element and a Group III B element, the composition comprising a superconductive/resistive transition defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$, the transition-onset temperature T_c being greater than or equal to 26°K;

(b) a temperature controller for maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_{p=0}$ of the superconductive composition; and

(c) a source of an electric current to flow in the superconductor element.

CLAIM 515 (Previously Presented) An apparatus for conducting an electric current essentially without resistive losses, comprising:

(a) a superconductor element made of a superconductive composition, the superconductive composition consisting essentially of a copper-oxide compound comprising a crystal structure comprising a layered characteristic and a perovskite related structure, the copper-oxide compound including at least one element selected from the group consisting of a group II A element, at least one element selected from the group consisting of a rare earth element and at least one element selected from the group consisting of a Group III B element, the composition comprising a

superconductive-resistive transition temperature defining a superconductive/resistive-transition temperature range between an upper limit defined by a transition-onset temperature T_c and a lower limit defined by an effectively-zero-bulk-resistivity intercept temperature $T_{\rho=0}$, the transition-onset temperature T_c being greater than or equal to 26°K;

(b) a temperature controller for maintaining the superconductor element at a temperature below the effectively-zero-bulk-resistivity intercept temperature $T_{\rho=0}$ of the superconductive composition; and

(c) a source of an electric current to flow in the superconductor element.

CLAIM 516 (Previously Presented) An apparatus of claim 146 wherein said means for carrying a superconductive current is comprised of an oxide.

CLAIM 517 (Previously Presented) An apparatus comprising:

a superconductive current carrying element comprising a $T_c \geq 26^{\circ}K$;

said superconductive current carrying element comprises a metallic, oxygen-deficient, perovskite-like, mixed valent copper compound.

CLAIM 518 (Previously Presented) An apparatus according to claim 517, wherein said superconductive current carrying element is at a temperature greater than or equal to 26°K.

CLAIM 519 (Previously Presented) An apparatus according to claim 517, further including a temperature controller for maintaining said superconductive current carrying element at a temperature less than said T_c.

CLAIM 520 (Previously Presented) An apparatus according to anyone of claims 517, 518 or 519, wherein said superconductive current carrying element comprises one or more of the group consisting of Be, Mg, Ca, Sr, Ba, Ra, Sc, Y, La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho Er, Tm, Yb and Lu.

CLAIM 521 (Previously Presented) An apparatus according to anyone of claims 517, 518 or 519, wherein said superconductive current carrying element comprises one or more of Be, Mg, Ca, Sr, Ba and Ra and one or more of Sc, Y, La, Ce, Pr, Nd, Pm, Sm, Eu Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu.

CLAIM 522 (Previously Presented) An apparatus comprising:

a superconductive current carrying element comprising a $T_c \geq 26^{\circ}K$;

said superconductive current carrying element comprises a composition that can be made according to known principles of ceramic science.

CLAIM 523 (Previously Presented) An apparatus according to claim 522, wherein said superconductive current carrying element is at a temperature greater than or equal to $26^{\circ}K$.

CLAIM 524 (Previously Presented) An apparatus according to claim 523, further including a temperature controller for maintaining said superconductive current carrying element at a temperature less than said T_c.

CLAIM 525 (Previously Presented) An apparatus according to anyone of claims 522, 523 or 524, wherein said superconductive current carrying element comprises one or more of the group consisting of Be, Mg, Ca, Sr, Ba, Ra, Sc, Y, La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu.

CLAIM 526 (Previously Presented) An apparatus according to anyone of claims 522, 523 or 524, wherein said superconductive current carrying element comprises one or more of Be, Mg, Ca, Sr, Ba and Ra and one or more of Sc, Y, La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu.

CLAIM 527 (Previously Presented) An apparatus according to claim 525, wherein said superconductive current carrying element comprises a transition metal.

CLAIM 528 (Previously Presented) An apparatus according to claim 526, wherein said superconductive current carrying element comprises a transition metal.

CLAIM 529 (Previously Presented) An apparatus according to claim 522, wherein said superconductive current carrying element comprises copper oxide.

CLAIM 530 (Previously Presented) An apparatus according to anyone of claims 522, 523 or 524, wherein said superconductive current carrying element is substantially perovskite.

CLAIM 531 (Previously Presented) An apparatus according to anyone of claims 522, 523 or 524, wherein said superconductive current carrying element comprises a perovskite-like structure.

CLAIM 532 (Previously Presented) An apparatus according to anyone of claims 522, 523 or 524, wherein said superconductive current carrying element comprises a perovskite related structure.

CLAIM 533 (Previously Presented) An apparatus according to anyone of claims 522, 523 or 524, wherein said superconductive current carrying element comprises a nonstoichiometric amount of oxygen.

CLAIM 534 (Previously Presented) An apparatus according to anyone of claims 522, 523 or 524, wherein said superconductive current carrying element comprises a layered structure.

CLAIM 535 (Previously Presented) An apparatus comprising a superconductor exhibiting a superconducting onset at an onset temperature greater than or equal to 26°K, said superconductor being comprised of at least four elements, none of which is a means for carrying a superconducting current at a temperature greater than or equal to 26°K, means for maintaining said superconductor at an operating temperature in excess of said onset temperature to maintain said superconductor in a superconducting state and means for passing current through said superconductor while in said superconducting state.

CLAIM 536 (Previously Presented) An apparatus comprising:

a means for carrying a superconductive current exhibiting a superconductive state at a temperature greater than or equal to 26°K,

a cooler for cooling said composition to a temperature greater than or equal to 26°K at which temperature said means for carrying a superconductive current exhibits said superconductive state, and

a current source for passing an electrical current through said composition while said composition is in said superconductive state.

CLAIM 537 (Previously Presented) An apparatus comprising:

a metallic, oxygen-deficient, perovskite-like, mixed valent transition metal composition exhibiting a superconductive state at a temperature greater than or equal to 26°K,

a temperature controller maintaining said composition at a temperature greater than or equal to 26°K at which temperature said composition exhibits said superconductive state, and

a current source passing an electrical current through said composition while said composition is in said superconductive state.

CLAIM 538 (Previously Presented) The apparatus of claim 537, where said means for carrying a superconductive current is comprised of a metal oxide.

CLAIM 539 (Previously Presented) The apparatus of claim 537, where said means for carrying a superconductive current is comprised of a transition metal oxide.

CLAIM 540 (Previously Presented) An apparatus comprising:

a composition comprising oxygen exhibiting a superconductive state at a temperature greater than or equal to 26°K, a temperature controller for maintaining said composition at a temperature greater than or equal to 26°K at which temperature said composition exhibits said superconductive state, and

a source of an electrical current through said composition while said composition is in said superconductive state.

CLAIM 541 (Previously Presented) An apparatus according to claim 540, where said composition is comprised of a metal oxide.

CLAIM 542 (Previously Presented) An apparatus according to claim 541, where said composition is comprised of a transition metal oxide.

CLAIM 543 (Previously Presented) A combination, comprising:

an oxygen containing composition exhibiting the onset of a DC substantially zero resistance state at an onset temperature in excess of 30°K, and

means for passing an electrical current through said composition while it is in said substantially zero resistance state.